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Michael Brandman Associates

18380007 • 06/2006 | 4_Burrowing_Owl_Locations.mxd



Exhibit 4 Burrowing Owl Locations Map

SARES REGIS GROUP, 99.0 ACRE ONTARIO PROPERTY
FOCUSED BURROWING OWL REPORT

Territory 4. A single BUOW (assumed to be the male) was observed occupying one burrow with substantial BUOW sign, including pellets and white-wash. The burrow was also lined with fecal matter and debris that suggested it was an active nest site. The nest burrow was located on the east-facing slope of a small basin in the southern portion of the site (Exhibit 4). When the male flushed, it was observed to land in the far southeast corner of the basin where several additional suitable burrows occurred but showed no BUOW sign. This location was approximately 325 feet to the southeast of the nest burrow. The timing of the surveys would have coincided with the incubation period of the nesting cycle. During this period, the female is rarely seen because she is incubating the eggs and the male will bring prey items to the burrow entrance for her consumption. For this reason, Territory 4 was assumed to be a pair with an active nest.

6.2 - NESTING BIRDS

Besides BUOW, the following bird species were observed nesting on the project site: mourning dove (*Zenaida macroura*) and California horned lark (*Eremophila alpestris*). Other species observed that could utilize the project site for nesting include: loggerhead shrike (*Lanius ludovicianus*), western meadowlark (*Sturnella neglecta*), and northern mockingbird (*Mimus polyglottos*).

6.3 - OTHER SENSITIVE SPECIES

Several sensitive species were observed on or near the project site during habitat assessments and during the focused BUOW surveys. A male California gnatcatcher (*Poliophtila californica*) (CAGN) (federally threatened) in breeding plumage was observed on April 18, 2006 utilizing the south facing slopes of the Milliken Landfill borrow pit, outside of the project site. A juvenile CAGN was observed along the southern boundary of the project site on May 16, 2006 foraging in mule-fat. It was making constant call notes indicating it was not entirely independent of the adults. The project site does not provide nesting habitat for CAGN, but provides limited foraging and dispersing habitat for CAGN. Sufficient CAGN nesting, foraging, and dispersal habitat occurs offsite on the adjacent landfill to support CAGN in the vicinity. Other California Special Concern (CSC) species observed on the project site included loggerhead shrike (*Lanius ludovicianus*) and California horned lark (*Eremophila alpestris*).

SECTION 7: CONCLUSIONS AND RECOMMENDATIONS

The Project Site provides suitable foraging, dispersing and breeding habitat for BUOW. The survey area included the Project Site. A total of seven BUOW were determined to occupy the survey area. This included three pairs and one individual owl, for a total of four territories.

Under the *Migratory Bird Treaty Act and Fish and Game Code*, no disturbance is permitted to occur within 75 meters (approx. 250 feet) of occupied burrows during the breeding season (February 1 through August 31), as recommended by California Burrowing Owl Consortium (1993). Due to the long and narrow nature of the project site, the proposed intensive development of the site, and the existing commercial development surrounding site, conservation of onsite BUOW habitat was determined to be infeasible. Instead, a mitigation plan should be developed and approved by the California Department of Fish and Game (CDFG) that will relocate these owls to an area away from the project site. The following measures would be followed to minimize any potential impacts during a relocation effort:

- A. Occupied burrows will not be disturbed if an active nest, as verified by a qualified biologist;
and
- B. The existing burrows on the project site will be systematically collapsed, using the California Burrowing Owl Consortium's *Burrowing Owl Protocol and Mitigation Guidelines*. This will insure that no owls reside inside burrows to be collapsed.

SECTION 8: CERTIFICATION

I hereby certify that the statements furnished above and in the attached exhibits present data and information required for this focused survey, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief.

Date: July 19, 2006

Signed: _____

Mikael Romich



SECTION 9: REFERENCES

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- Tom Dodson & Associates. April 2005. *Focused surveys for San Bernardino kangaroo rat and burrowing owl for a 103-acre parcel north of Milliken Sanitary Landfill City of Ontario, San Bernardino County, California*. Prepared for Lilburn Corporation.
- Warnock, R.G. and P.C. James. 1997. *Habitat fragmentation and Burrowing Owls (Speotyto cunicularia) in Saskatchewan*. Pages 477-486 in J.R. Duncan, D.H. Johnson, and T.H. Nicholls, editors. *Biology and conservation of owls of the Northern Hemisphere: Second International Symposium*. USDA Forest Service General Technical Report NC-190, North Central Forest Experiment Station, St. Paul, MN.

Appendix A: Faunal Compendium

Faunal Compendia

Birds

Accipitridae

Accipiter cooperii
Buteo jamaicensis

Aegithalidae

Psaltiriparus minimus

Alaudidae

Eremophila alpestris

Anatidae

Anas cyanoptera
Anas platyrhynchos

Apodidae

Aeronautes saxatalis

Certhiidae

Poliophtila caerulea
Poliophtila californica

Columbidae

Zenaida macroura

Corvidae

Corvus brachyrhynchos
Corvus corax

Fringillidae

Carduelis psaltria
Carduelis tristis
Carpodacus mexicanus
Chondestes grammacus
Dendroica coronata
Icterus bullockii
Melospiza lincolnii
Molothrus ater
Passerculus sandwichensis
Passerina amoena
Pipilo crissalis
Sturnella neglecta
Wilsonia pusilla
Zonotrichia leucophrys

Hirundinidae

Hirundo rustica
Petrochelidon pyrrhonota
Stelgidopteryx serripennis
Tachycineta bicolor

Hawks

Cooper's hawk
red-tailed hawk

Bushtits

bushtit

Larks

California horned lark

Ducks

cinnamon teal
mallard

Swifts

white-throated swift

Creepers

blue-gray gnatcatcher
California gnatcatcher

Pigeons and Doves

mourning dove

Jays and Crows

American crow
common raven

Finches, Blackbirds

lesser goldfinch
American goldfinch
house finch
lark sparrow
yellow-rumped warbler
Bullock's oriole
Lincoln's sparrow
brown-headed cowbird
savannah sparrow
lazuli bunting
California towhee
western meadowlark
Wilson's warbler
white-crowned sparrow

Swallows

barn swallow
cliff swallow
northern rough-winged swallow
tree swallow

Laniidae

Lanius ludovicianus

Passeridae

Anthus rubescens

Strigidae

Athene cunicularia

Sturnidae

Mimus polyglottos

Trochilidae

Calypte anna

Troglodytidae

Thryomanes bewickii

Tyrannidae

Myiarchus cinerascens

Sayornis nigricans

Tyrannus verticalis

Canidae

Canis latrans

Leporidae

Sylvilagus audubonii

Sciuridae

Spermophilus beecheyi

Shrikes

loggerhead shrike

Old World Sparrows

American pipit

Typical Owls

burrowing owl

Mimics

northern mockingbird

Hummingbirds

Anna's hummingbird

Wrens

Bewick's wren

Tyrant Flycatchers

ash-throated flycatcher

black phoebe

western kingbird

Dog Family

coyote

Rabbits

desert cottontail

Squirrels

California ground squirrel

**SECOND YEAR FOCUSED SURVEY
FOR DELHI SANDS
GIANT FLOWER-LOVING FLY
(*Rhaphiomidas terminatus abdominalis*)
ON A 103-ACRE SITE NORTH OF THE MILLIKEN
SANITARY LANDFILL, ONTARIO, CALIFORNIA**

Prepared for:

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Prepared by:

**Kendall H. Osborne
Osborne Biological Consulting
6675 Avenue Juan Diaz
Riverside, CA 92509**

October 15, 2004

Biological Surveys

The property north of the Milliken Sanitary Landfill is located within critical habitat for the Delhi Sands Giant Flower-Loving Fly (*Rhaphiomidas terminatus abdominalis*), a federally endangered species.

Additional species of concern include the Burrowing Owl and the San Diego horned toad lizard, both listed as a "California Special Concern Species." The Burrowing Owl is a migratory bird also protected by the international treaty under the Migratory Bird Treaty Act of 1918, protected by State law under the California Fish and Game Code (CDFG Code No. 3513 and 3503.5), and is listed as a Federal Special Concern species.

A series of surveys to determine the presence or absence of the Delhi Sands Giant Flower-Loving Fly (DSF) was conducted per protocol developed by the U.S. Fish and Wildlife Service (USFWS). Per a report prepared in October 2004, DSF were not found to be present on the property after completing the protocol surveys (Osborne, October 15, 2004. *Second Year Focused Survey for Delhi Sands Flower-Loving Fly on a 103-acre Site North of the Milliken Sanitary Landfill, Ontario, California*).

Surveys for San Bernardino Kangaroo Rat (SBKR), another federally-endangered species, and Burrowing Owl were conducted in April 2005. SBKR was not found to be present on the site. However, several Burrowing Owls, possibly breeding/nesting on the property were discovered in several distinct locations (Tom Dodson & Associates, April 2005. *Focused Surveys for San Bernardino Kangaroo Rat and Burrowing Owl for a 103-acre Parcel North of Milliken Sanitary Landfill, City of Ontario, San Bernardino County, California*).

All of the above species have been known to thrive in sandy environments. The Milliken Landfill property has not been cleared of vegetation by the County. There are very few sections of the property that are void of, or have little, vegetation. The dense vegetation may be a factor in the absence of the DSF, SBKR, and the specific locations for the Burrowing Owl.

As of April 2005, it is the County's understanding that a new protocol survey for DSF may be required prior to development. The buyer/developer needs to satisfy itself as to the what, if any protocol, is required prior to development. Further, the Burrowing Owl may require relocation prior to development, grading or weed abatement. Again, the buyer/developer needs to satisfy itself as to all protocols for the noted species (and any other species), including but not limited to any additional survey and relocation requirements prior to development, grading, and weed abatement.

The County makes no guarantees that other endangered or threatened species or plants, or species or plants of concern, not studied in the above mentioned reports are not present on site. Further, the County makes no guarantees the State and/or Federal status of the above-studied species, or any others included or omitted from the above-mentioned reports, will not change by the time of sale or development. The buyer/developer needs to satisfy itself what, if any, biological evaluation in accordance with all State and Federal guidelines is necessary prior to weed abatement, grading maintenance, and final development.

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**SECOND YEAR FOCUSED SURVEY FOR
DELHI SANDS GIANT FLOWER-LOVING FLY
(*Rhaphiomidas terminatus abdominalis*)
ON A 103-ACRE SITE NORTH OF THE MILLIKEN
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Prepared for:

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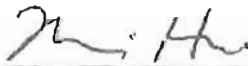
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The undersigned certify this report to be a complete and accurate account of the findings and conclusions of a second year, 2004 focused survey for Delhi Sands Giant Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*) on a 103-acre site located on the north side of the Milliken Sanitary Landfill (between Milliken and Haven Avenues), Ontario, San Bernardino County, California.



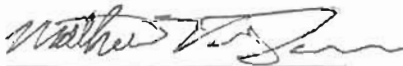
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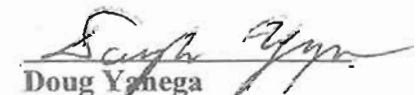
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October 7, 2004

SUMMARY

The San Bernardino County Solid Waste Management Division has requested a focused survey to assess the presence or absence of Delhi Sands Flower-Loving Fly (DSF, *Rhaphiomidas terminatus abdominalis*) on a 103-acre site located north of the Milliken Sanitary Landfill, Ontario, California. To assess this site for potential as habitat for the federally endangered DSF and to determine presence or absence of DSF on the site, I visited the site on June 23, 2003. Subsequently, I conducted two years of survey on the site from July 15 to September 20, 2003, and between July 1 and September 20, 2004.

Delhi Sands Flower-Loving Fly was not observed on the site during the course of either year 2003 or 2004 survey.

Delhi sands cover large portions of the site so that approximately half the site represents very high quality habitat for the DSF and another third of the site moderate quality habitat on sands in viticulture. A high diversity of sand associated arthropods and other wildlife was found on the subject site.

1.0 INTRODUCTION

This report presents the methods and results of a Delhi Sands Flower-Loving Fly (DSF, *Rhaphiomidas terminatus abdominalis*) focused two year survey for a 103-acre site located north of the Milliken Sanitary Landfill, Ontario. The DSF was listed as an endangered species by the U.S. Fish and Wildlife Service (USFWS) on September 23, 1993 (USFWS 1993).

The survey site is located on the Guasti, California USGS 7.5-minute quadrangle map, Township 1 South, Range 7 West, on the northern portion of Section 36. Latitude ranges from approximately 034° 02' 27" to 34° 02' 40" N and Longitude from 117° 33' 27" to 117° 34' 30" W. Figure 1 shows the general vicinity of the survey site at 50% scale on the Guasti, California USGS 7.5-minute quadrangle map. Figure 2 displays the survey site at 200% scale on this USGS quadrangle. Figure 3 provides the project vicinity as it is given in *the Thomas Guide* (2001).

The survey area is generally bounded by Francis Street on the north, Milliken Avenue on the east, Haven Avenue on the west, and the Milliken Sanitary Landfill on the south.

The results of the field surveys will provide additional baseline data required to evaluate potential impacts to DSF or supporting suitable habitat for the species as a result of any future development of this site.

2.0 SPECIES BACKGROUND

Delhi Sands Giant Flower-loving fly belongs to a genus of flies (*Rhaphiomidas*) commonly known as giant flower loving flies. There are more than 30 species of these flies, distributed

across the southwestern United States and northern Mexico. These flies are huge by the standards set by most flies – with size among the species ranging from ca. 1.5 centimeters up to 3, and even 4 centimeters, usually gray, tan, rust or yellow in color. All species of *Rhaphiomidas* are associated with rather arid, sandy habitats, with most species living on dune systems of inland desert valleys, rivers, deltas, and beach strands. A few species are found in sandy washes, alluvial benches and remnant glacial moraines. Many species of these flies often hover before flowers in the manner of hummingbirds, using a long, thin, tubular proboscis (mouth-part), with which the flies probe for nectar – hence the name “giant flower-loving flies”. Smaller flies of the family Apioceridae, once considered very closely related to *Rhaphiomidas* were traditionally called “flower-loving flies”.

The DSF is only known to occur in association with Delhi sand deposits. It presumably occupied the once extensive dune system of the upper Santa Ana River Valley, including portions of what is now the City of Colton, west through portions of the City of Ontario, and south to the Santa Ana River. Today, DSF exists on only a few disjunct sites (USFWS 1997) within a radius of about eight miles in southwestern San Bernardino and northwestern Riverside Counties (Colton, Rialto, Fontana, and Ontario). More than 95 percent of known DSF habitat was considered eliminated by development, agriculture and other land management practices by 1993 (Smith 1993, USFWS 1996 in Kingsley 1996). However, this proportion is now nearer 98 to 99% due to these ongoing processes. Many of the last remaining fragments of DSF habitat are currently under pressure by land management efforts such as heavy disking, irrigation, manure dumping, and gravel dumping. There is presently an estimated 1,200 acres of habitat that can support this species (USFWS 1997), but this estimate likely includes lands needing extensive habitat restoration.

Adult DSF flight period is typically August and September, when individual adults emerge, reproduce and die. The adult life span of an individual DSF lasts for a few days and adults do not live beyond the flight period (Kiyani 1995). DSF, like other *Rhaphiomidas* species, appears to have an annual life cycle (because of the annual flight). However, it is widely believed that the underground larval/pupal stage may persist for additional years, depending upon various environmental factors such as annual rainfall, food availability and weather conditions during the flight season (many desert *Rhaphiomidas* species do not appear after a drought year and often, substantial flights occur only sporadically over the years). It is known that DSF larvae develop underground, however the specific biology (larval biology, habits and food requirements) are not yet known for DSF or any other *Rhaphiomidas* species. Known life histories of all related fly families and genera involve parasitism or predation on other soil dwelling arthropods. It is therefore considered highly likely that *Rhaphiomidas* development is dependent on some other endemic insect species in the community.

Adult DSF are highly mobile, agile fliers. Male DSF are frequently seen flying low through habitat, using apparently random, circuitous paths around and between shrubs in search of females. Such “cruising” behavior often covers areas on the scale of 1000 square meters in the timespan of a minute. Alternatively, male DSF are often seen flying about an open patch of ground (ca 100 square meters) such as along a dirt path or dune blow-out area. Here, males may repetitively land and rest on one or another object (such as small dried plants) in

the area. Such rests are interrupted by periods of patrolling flight (apparently territorial) about the spot. When alarmed, these insects tend to fly rapidly in more or less a straight line – often covering distances of 100 meters in less than 6 seconds. Adult DSF are known to nectar at flowers of California buckwheat and California croton.

2.1 DSF Habitat Characteristics

DSF is typically found in areas of unconsolidated sandy soils (Delhi series) supporting an open community of native and exotic plant species. Dominant plants are typically California buckwheat (*Eriogonum fasciculatum*), California croton (*Croton californicus*), telegraph weed (*Heterotheca grandiflora*), and deerweed (*Lotus scoparius*). Many exotic species often dominate on DSF habitat as well. DSF have been found in habitats that do not support these dominant plant species and plant species composition may not be directly relevant to larval development (due to likely predatory or parasitic habit of DSF larvae). Adult DSF are known to nectar at flowers of California buckwheat and California croton. Many other plant species are common, including Thurber's eriogonum (*Eriogonum thurberi*), Autumn vinegar weed (*Lessingia glandulifera*) and sapphire eriastrum (*Eriastrum sapphirinum*). Nonnative plant species also occur in DSF habitat (and incidentally, virtually everywhere). DSF habitat also supports other associated insects such as flies and wasps considered as indicator species – *Apiocera convergens*, *Apiocera chrysolasia*, *Ligyra gazophylax*, *Campsomeris tolteca*, *Trielis alcione* and *Nemomydas pantherinus*. Over 350 insect species have been found on one DSF site. DSF habitat is typically marked by high abundance and diversity of predatory and parasitic insect groups including many highly specialized families of flies, wasps, bees, beetles, and antlions. The Delhi Sands community is one of California's unique natural communities containing an array of native plants and animals; some of which are found nowhere else. One plant species, Pringle's monardella, (*Monardella pringlei*) is already presumed extinct, as no living individuals have been observed in many years. Several species of insects and some vertebrates, which inhabit the Delhi Sands dunes system, are as endangered as the DSF, but no one has yet petitioned to have them officially declared Endangered (Greg Ballmer, pers. comm.). These include the convergent flower-loving fly *Apiocera convergens*, a newly discovered species of Jerusalem cricket, (*Stenopelmatus* sp.), a new species of camel cricket (*Ceuthophilus* sp.) and an endemic subspecies of butterfly *Apodemia mormo nigrescens* (Emmel and Emmel 1998). The other apiocerid fly (*Apiocera chrysolasia*), although known from approximately six general localities, is only common within the Delhi sands.

2.2 DSF Survey Guidelines

Interim General Survey Guidelines for the DSF have been suggested by the USFWS (1996). By following these guidelines, DSF presence or absence survey results may be deemed acceptable to the USFWS (rejection of survey results is likely to result where the guidelines are not followed). The guidelines indicate that focused DSF surveys should be conducted wherever Delhi sands are present within the presumed range of DSF, twice weekly (two days per week) during the single annual flight period (usually from August 1 to September 20). Recent early season DSF discoveries lead the USFWS to recommend

a survey season from July 15 to September 20 for 2003 and a survey season from July 1 to September 20 for 2004 (see letter to consulting biologists in Appendix B). Surveys must be conducted for two flight periods (two years). Furthermore, weather conditions must be suitable for DSF activity at the times survey work is pursued. The DSF is generally active when daytime temperatures exceed 80 degrees Fahrenheit (°F), but may fly with slightly cooler temperatures in bright sunlight.

3.0 METHODS

The entire site has previously mapped as consisting of Delhi sands (Woodruff 1980). In 2003, the site was confirmed to have DSF habitat and potential. Surveys for 2003 were conducted between July 15 and September 20 with negative results for DSF (Osborne 2003).

Focused DSF surveys were carried out on 42 dates between July 1, and September 20, 2004. These surveys were conducted under Federal U. S. Fish and Wildlife Permits as follows: Kendall H. Osborne, Permit # TE-837760-5, Rick Rogers under Permit # TE-844645-0, Brian Harris, Doug Yanega and Matthew Van Dam, all under Osborne's permit. Following the USFWS Interim General Survey Guidelines, we surveyed all portions of the subject site at least twice a week, generally between the hours of 1000 and 1400 (Table 1). The survey protocol, as set forth in the Interim General Guidelines for the Delhi Sands flower-loving fly survey, is designed to maximize the validity of a presence/absence determination. The 103-acre site was surveyed with time and effort appropriate to 100 acres due to the fact that appreciable portions of the site (more than three acres) have been developed to railroad tracks with a rock bed, support dense riparian vegetation in a drainage south of S. Dupont St., or are covered with dumped exotic soils and rubble, or are otherwise covered in dense, hard-packed clay and gravel soils.

Osborne photographed the property from several perspectives to document existing conditions. Notes were taken on vegetative cover and plant species composition, abundance and diversity and species composition of insects and other animals, soil types, degree and nature of disturbance, surface cover, organic content, compaction, current land management practices, existing development, conditions of surrounding vicinity and proximity of other DSF populations.

Habitat suitability for DSF was evaluated using indicators of potential DSF habitat noted during the field visits, including: presence and abundance of loose, unconsolidated Delhi sands with low organic contamination; degree of habitat disturbance indicated by plant species composition and disposition of soil surface, presence and abundance of native sand associated plants such as *Croton californicus*, *Heterotheca grandiflora*, *Eriogonum thurberi*, and *Eriogonum fasciculatum*. Presence and abundance of Delhi sands associated insects such as *Apiocera convergens*, *Apiocera chrysolasia*, and (to a lesser extent) *Nemomydas pantherinus*. Potential DSF habitat was further evaluated on the basis of overall insect diversity and abundance, particularly with respect to sand associated predators and parasitoids.

Table 1 presents field survey date information for 2004.

Table 1. Dates, personnel, times and conditions for focused DSF survey (2004).

Date	Biologists	Hours	Weather Conditions
1 July 2004	K. H. Osborne	1000 - 1400	71-81°F, winds 0-2 mph., gusts to 10 mph., 10% cloud cover, haze, clear by 1100
2 July 2004	K. H. Osborne	1000 - 1140	73-84°F, winds 0-5 mph.
3 July 2004	K. H. Osborne R. Rogers	1125 - 1412	70-75°F, winds 0 mph., overcast to clear, patchy @ 1230, cloudy @ 1400
5 July 2004	K. H. Osborne M. Van Dam	1210 - 1400	86-90°F, winds 0-5 mph.
9 July 2004	K. H. Osborne R. Rogers B. Harris	1000 - 1400	73-91°F, winds 0 mph.
11 July 2004	D. Yanega	1000 - 1400	81-96°F, winds 0 mph.
11 July 2004	K. H. Osborne	1000 - 1145 1345 - 1400	81-96°F, winds 0 mph.
13 July 2004	K. H. Osborne	1155 - 1230 1315 - 1400	96-102°F, winds 0-5 mph.
13 July 2004	R. Rogers	1155 - 1400	96-102°F, winds 0-5 mph.
16 July 2004	R. Rogers B. Harris	1000 - 1400	82-93°F, winds 0-2 mph., cloud cover 50%
20 July 2004	R. Rogers	1000 - 1400	86-98°F, winds 0-5 mph.
20 July 2004	K. Osborne	1000 - 1320	86-98°F, winds 0-5 mph.
21 July 2004	K. H. Osborne M. Van Dam	1124 - 1145	86-90°F, winds 0 mph.
23 July 2004	M. Van Dam	1000 - 1400	73-90°F, winds 3-6 mph.
24 July 2004	K. H. Osborne	1205 - 1400	92-95°F, winds 0 mph.
26 July 2004	M. Van Dam	1000 - 1200	83-94°F, winds 2-5 mph.
26 July 2004	K. H. Osborne	1045 - 1118	97-98°F, winds 0 mph.
27 July 2004	M. Van Dam	1000 - 1400	77-96°F, winds 1-5 mph.
28 July 2004	M. Van Dam	1000 - 1400	74-91°F, winds 1-5 mph.
30 July 2004	R. Rogers	1000 - 1400	74-89°F, winds 2-8 mph.
30 July 2004	M. Van Dam	1000 - 1400	74-89°F, winds 2-8 mph.
3 Aug. 2004	K. H. Osborne	1015 - 1135	72°F, winds 5-7 mph., haze burning, sun out at 1015
3 Aug. 2004	M. Van Dam	1015 - 1400	winds 5-7 mph., 70-86°F, haze burning, sun out at 1015
4 Aug. 2004	K. H. Osborne M. Van Dam	1040 - 1055 1040 - 1310	76-87°F, winds 3-7 mph
6 Aug. 2004	M. Van Dam R. Rogers	1000 - 1400	72-96°F, winds 2-5 mph.
9 Aug. 2004	M. Van Dam	1000 - 1400	86-102°F, winds 2-9 mph.
10 Aug. 2004	M. Van Dam	1000 - 1400	87-104°F, winds 1-8 mph.

13 Aug. 2004	M. Van Dam R. Rogers	1000 - 1400	76-94°F, winds 2-8 mph., partly cloudy
13 Aug. 2004	K. H. Osborne	1100 - 1200	75-76°F, winds 0 mph., 25% haze
16 Aug. 2004	M. Van Dam	1000 - 1400	77-92°F, winds 2-7 mph.
17 Aug. 2004	K. H. Osborne	1000 - 1050	78-85°F, winds 0 mph.
18 Aug. 2004	M. Van Dam	1000 - 1310	78-90°F, winds 2-10 mph.
20 Aug. 2004	M. Van Dam R. Rogers	1000 - 1400	72-89°F, winds 2-6 mph.
23 Aug. 2004	M. Van Dam	1000 - 1400	67-82°F, winds 2-5 mph.
24 Aug. 2004	M. Van Dam	1020 - 1400	68-80°F, winds 1-4 mph.
24 Aug. 2004	K. H. Osborne	1209 - 1315	75-77°F, winds 0-2 mph.
27 Aug. 2004	M. Van Dam R. Rogers	1000 - 1400	71-89°F, winds 2-5 mph., haze burning off
27 Aug. 2004	K. H. Osborne	1045 - 1122	76°F, winds 0-2 mph.
30 Aug. 2004	M. Van Dam	1010 - 1400	79-99°F, winds 2-6 mph.
31 Aug. 2004	M. Van Dam	1000 - 1400	85-102°F, winds 2-5 mph.
2 Sept. 2004	M. Van Dam	1015 - 1400	88-100°F, winds 2-5 mph.
3 Sept. 2004	M. Van Dam	1000 - 1400	74-86°F, winds 2-4 mph.
6 Sept. 2004	K. H. Osborne M. Van Dam	1118 - 1213 1118 - 1400	95°F, winds 0-2 mph.
7 Sept. 2004	M. Van Dam	1000 - 1400	83-104°F, winds 2-5 mph.
8 Sept. 2004	K. H. Osborne	1050 - 1110	90°F, winds 0 mph.
9 Sept. 2004	M. Van Dam	1000 - 1400	80-97°F, winds 2-4 mph.
10 Sept. 2004	M. Van Dam R. Rogers	1000 - 1200	85-93°F, winds 2-4 mph.
13 Sept. 2004	M. Van Dam	1000 - 1245	71-81°F, winds 0-2 mph., haze
13 Sept. 2004	K. H. Osborne	1045 - 1245	71-81°F, winds 0-2 mph., haze
15 Sept. 2004	M. Van Dam K. H. Osborne	1100 - 1415 1240 - 1415	70-85°F, winds 2-5 mph., haze
17 Sept. 2004	M. Van Dam B. Harris	1024 - 1400	75-77°F, winds 0-5 mph., 0-haze
17 Sept. 2004	K. H. Osborne	1024 - 1134	75-77°F, winds 0-5 mph., 0-haze
19 Sept. 2004	K. H. Osborne	1030 - 1408	73-77°F, winds 5-10 mph., 10% cloud cover

4.0 RESULTS

4.1 Delhi Sands Giant Flower-loving Fly not found on the subject site.

Delhi Sands Flower-Loving Fly (DSF, *Rhaphiomidas terminatus abdominalis*) was not observed on the subject site during the course of either year 2003 or 2004 survey season.

4.2 Existing Environment and Community

4.2.1 Adjacent lands

Lands north, west and east of the subject site are developed into commercial enterprises such as warehouses. The Milliken Sanitary Landfill, now closed, dominates lands to the south of the site, with an area of highly disturbed, disked land on the south of eastern portions of the site.

4.2.2 Topography

The site has slight rolling topography owing to relictual sand dune structure. Dunes, formerly in viticulture, still have elevational differentials of nearly 15 feet. In addition, large areas of excavation used to obtain fill materials associated with the landfill resulted in low basins in the central portion of the site. Elevation on the site ranges from approximately 857 feet to 885 feet.

4.2.3 Soils

The eastern (approximately) half of the site, as well as the western (approximate) third of the site consist of Delhi fine sands in dune formation. Past excavation activities on central portions of the site have exposed the underlying Tujunga gravelly sands (stripping away the overlaying Delhi sands. In addition, probably associated with past excavation and soils transportation associated with the landfill, additional areas of the central site have overlying soils contaminated with Tujunga materials packed to a hard and dense consistency. Past agricultural activities have apparently had little effect on the deep and extensive Delhi sands over most of the site.

4.2.4 Vegetation

The eastern half of the survey area is a long-abandoned vineyard, with secondary reestablishment of natural vegetation. Dominant plants in these areas are western ragweed (*Ambrosia acanthicarpa*) and *Verbesina encelioides*. Telegraph weed (*Heterotheca grandiflora*) and slender buckwheat (*Eriogonum gracile*) are co-dominants in some areas. *Eriogonum fasciculatum* and *Croton californica* are common in some areas on the eastern portion of the survey site. The western portion of the site with active viticulture on Delhi sands has a secondary weedy vegetation dominated by tumbleweed (*Amaranthus albus*) and western ragweed. Harder substrates on Tujunga soils (Woodruff 1980) where poorly drained, have mule fat (*Baccharis salicifolia*) in addition to the above listed dominant plants found over the site generally. Table 1 (Appendix A) provides a list of plant species encountered on the survey site.

4.2.5 Insect Community

During site visits, over 170 insect species (counting only large and conspicuous insects) were either casually observed or collected. A list of most insect species observed during

the course of focused survey work is presented in the appendix (Table 2, Appendix A). A highly diverse community of insects was present on the site, including the Delhi sands associated flies, *Apiocera convergens* (endemic to Delhi sands deposits), *Ligyra gazophylax*, and *Nemomydas pantherinus*. *Apiocera convergens* was observed in higher abundance than I have seen on any other site. Interestingly, *Apiocera crysolasia* was not observed. Bombyliid fly species (these being specialist parasites on other – typically predatory and parasitic insect species), and predatory robber flies (Assilidae) were diverse. In general, the insect community was marked by high abundance and diversity of predatory, parasitic and hyperparasitic insect groups. Apiocerids, mydids, bombyliids and asilids, (all mentioned above), tachinids, conopids, sphecids, pomililids, rhipiphorids, scoliids, mutilids, and mymerliontids were all well represented and common.

4.2.6 Vertebrate Community

Small mammal burrows were common throughout the site, mainly those of Botta's pocket gopher (*Thomomys bottae*) and apparently also some species of kangaroo rat (based on burrow structure). The Side-blotched lizard (*Uta stansburiana*) was the most commonly encountered vertebrate – large numbers of them seen on every site visit.

4.2.6.1 Special Animals

During both years of survey, two "Special Animals" as defined California Department of Fish and Game Natural Diversity DataBase (CNDDDB 2003) were incidentally detected within the survey area during the course of field surveys. The San Diego horned lizard (*Phrynosoma coronatum blainvillei*), was found in unusually high abundance, with several individuals observed per hour at times. Up to seven individuals of the Burrowing owl (*Athene cunicularia*) were observed occasionally in and near ground squirrel and coyote burrows on the central portion of the site (in sandy walls of the excavated basins). The owl is listed as "California Special Concern Species" (CSC) and "Federal Special Concern" species (FSC). The FSC category replaces the former "Category 2" category, wherein species were proposed as candidates for listing as threatened or endangered under the Federal Endangered Species Act. The San Diego horned lizard is listed as CSC. Table 3 (Appendix A) lists vertebrate species seen on the site.

5.0 DISCUSSION

On the basis of these survey results, and further, on the basis of my research and experience with DSF and other *Rhaphiomidas* species, experience with insect communities associated with Delhi sands and other sand dominated habitats of California, it is my opinion that the subject site does not currently support any DSF population.

The DSF is known to occur on a small, remnant dune located at the intersection of Greystone Drive and Milliken Avenue, approximately one mile (1.6 km) south of the subject site. This DSF population, is one of the last known remaining in the Ontario Recovery Unit (U.S. Fish and Wildlife Service 1997). Unfortunately, due to recent

commercial developments and heavy recreational off-road vehicle activities around the periphery, in close proximity to, and on that population site; and also due to the low numbers of DSF observed in this population, the future viability of the population is in serious doubt.

Proximity of this DSF population to the subject site and the high quality of DSF habitat on the site suggested potential for DSF to occur there. High numbers of sand endemic insects such as *Apiocera convergens*, as well as the presence of very abundant coast horned lizards and Burrowing owls suggest high conservation value and potential of the site.

6.0 REFERENCES

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U.S. Fish and Wildlife Service. 1993. Endangered and Threatened Wildlife and Plants: Determination of Endangered Status for the Delhi Sands Flower-loving Fly. U.S. Department of Interior. Federal Register, 58 (183): 49881-49887.

U.S. Fish and Wildlife Service. 1996. Delhi Sands Flower-loving Fly Draft Presence/Absence Survey Guidelines. December 30.

7.0 FIGURES

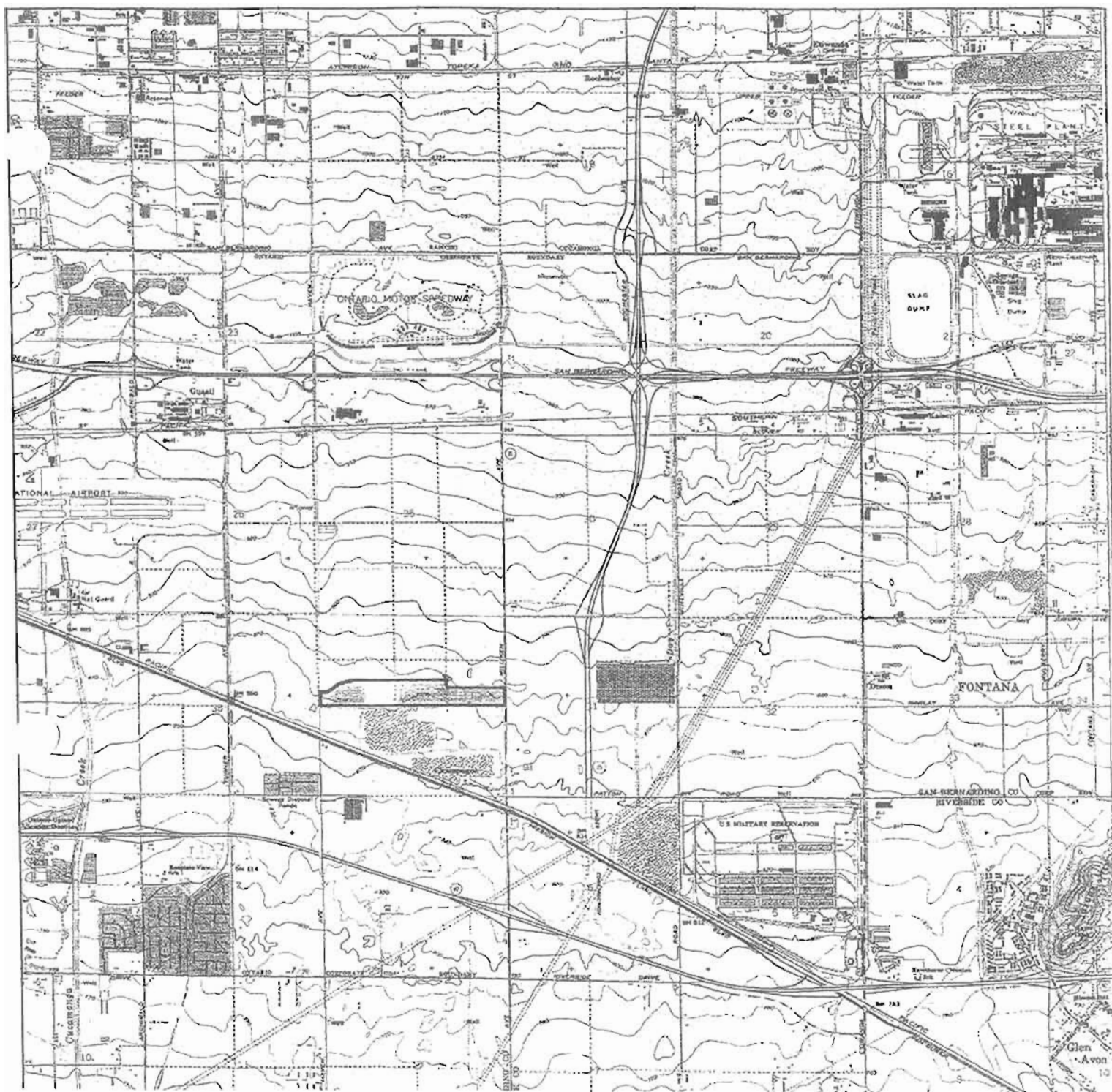


Figure 1. General vicinity of survey site, Guaste, California USGS 7.5" quadrangle at 50%. 103-acre site is outlined in black and highlighted in yellow.

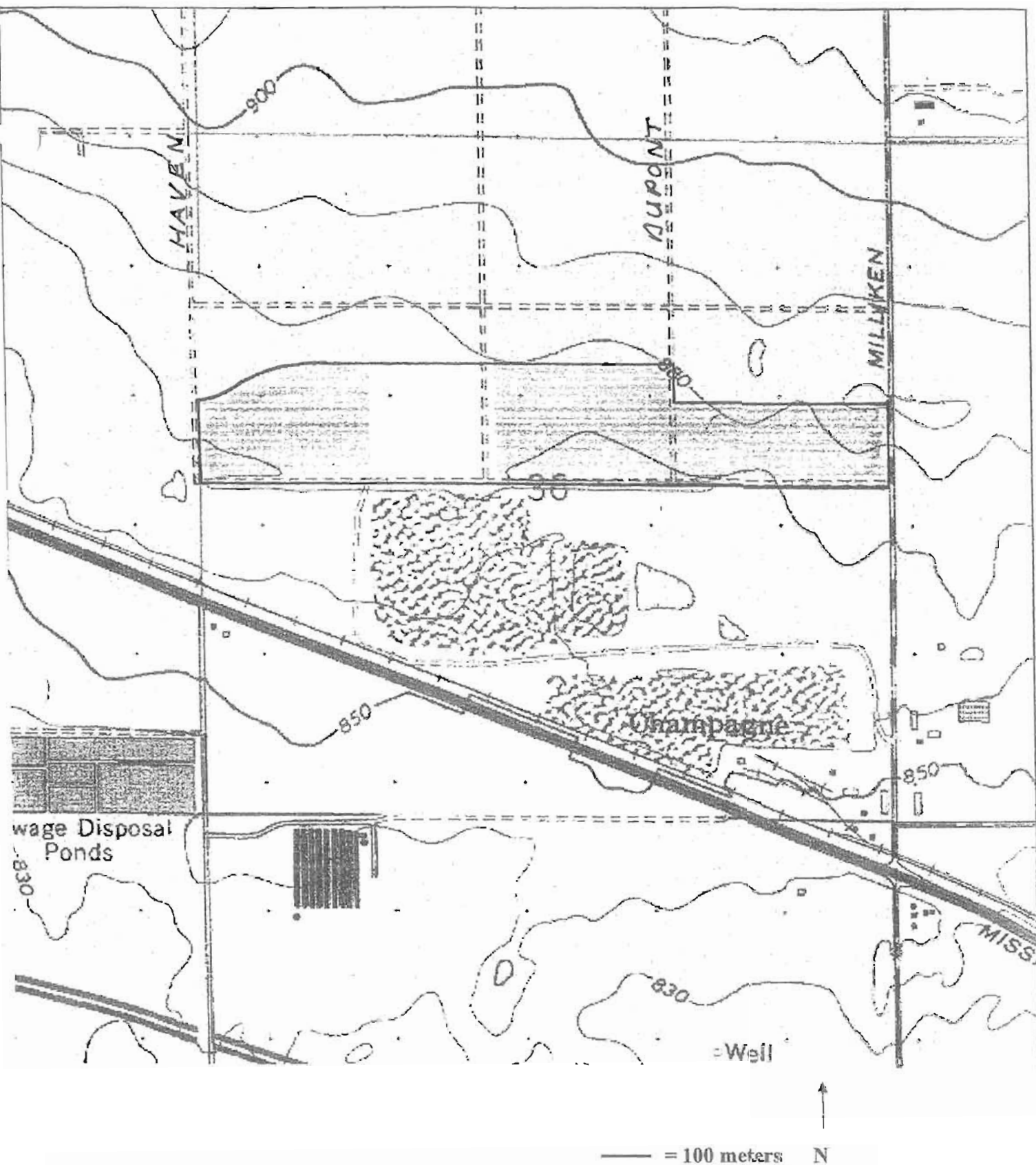


Figure 2. General vicinity of survey site, Guaste, California USGS 7.5" quadrangle at 200%. 103-acre survey site is outlined in black and highlighted in yellow.

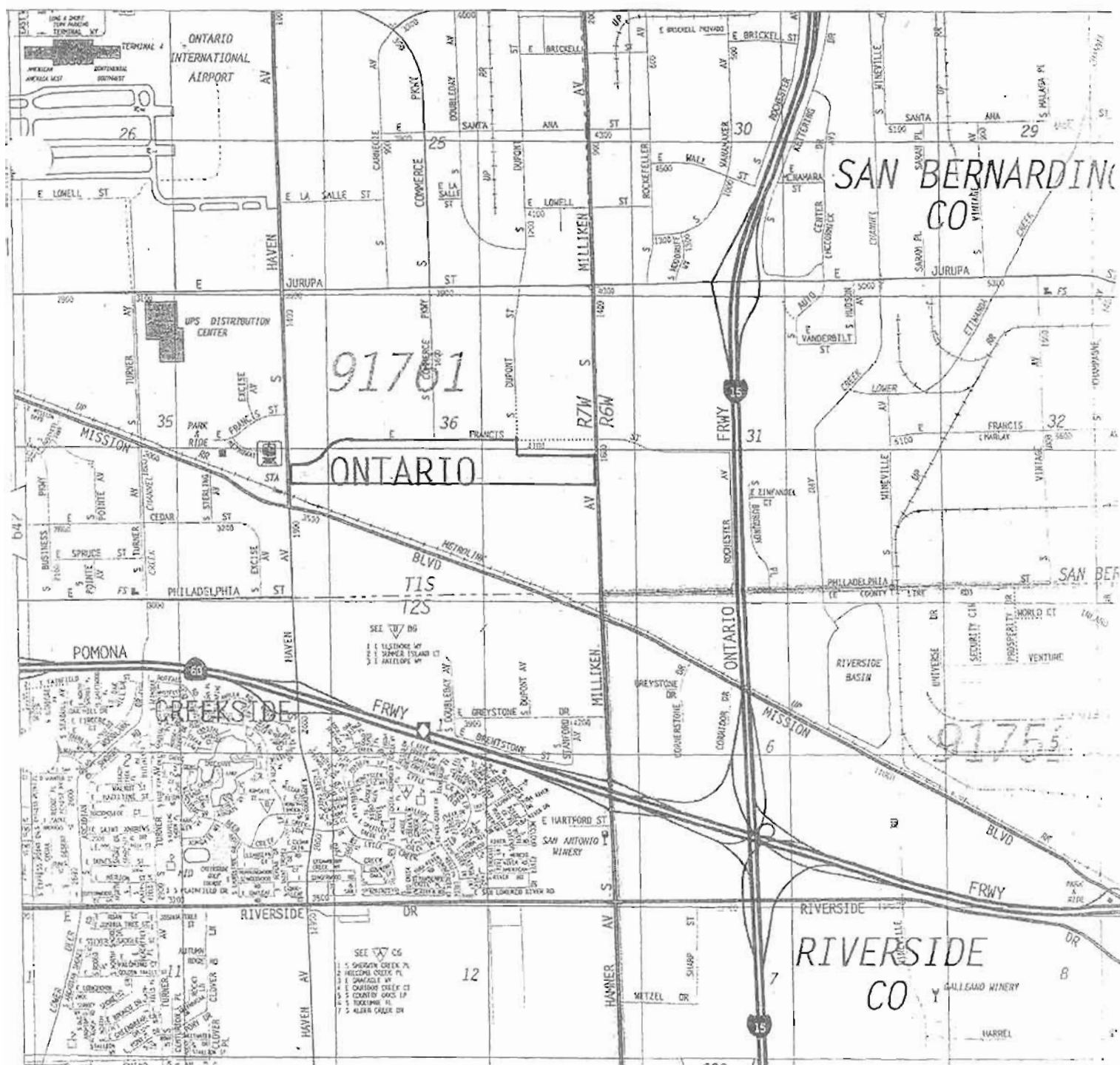


Figure 3. General site vicinity as it is given on page 643 in the *Thomas Guide* (2001). 103-acre survey area is outlined in black and indicated by an arrow.

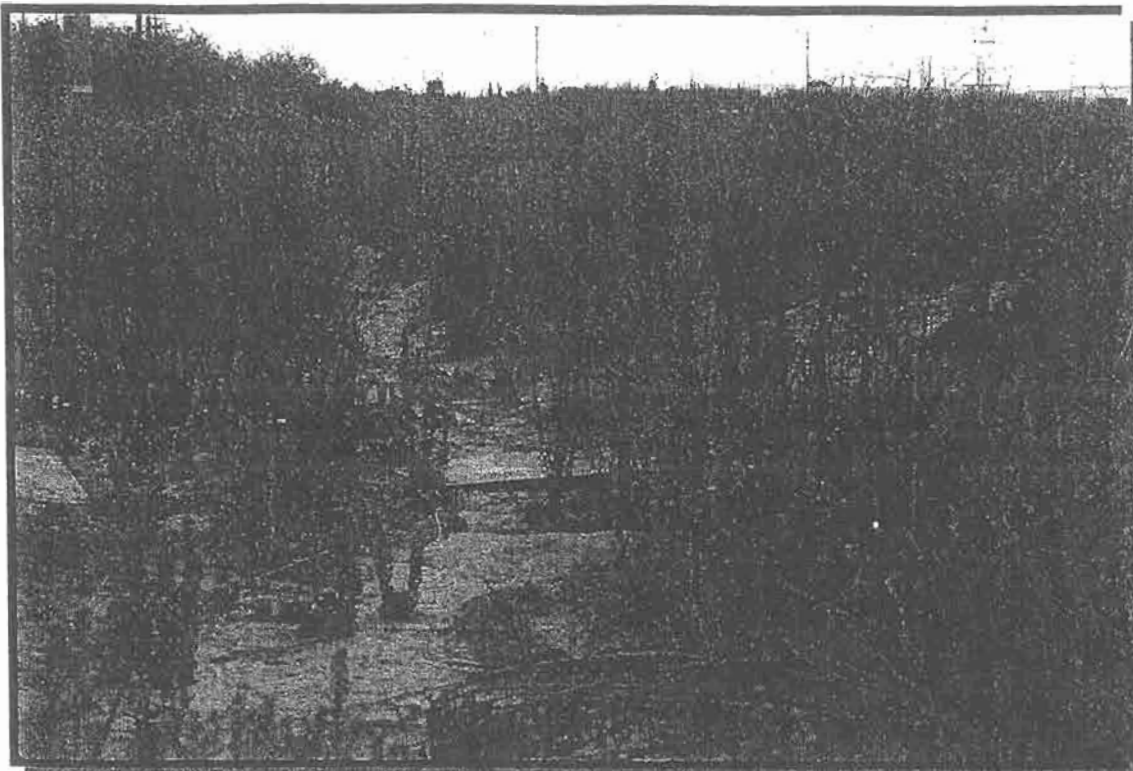


Figure 4. Photograph of high quality dune habitat on the eastern-central portion of the survey site. View looks to the east.

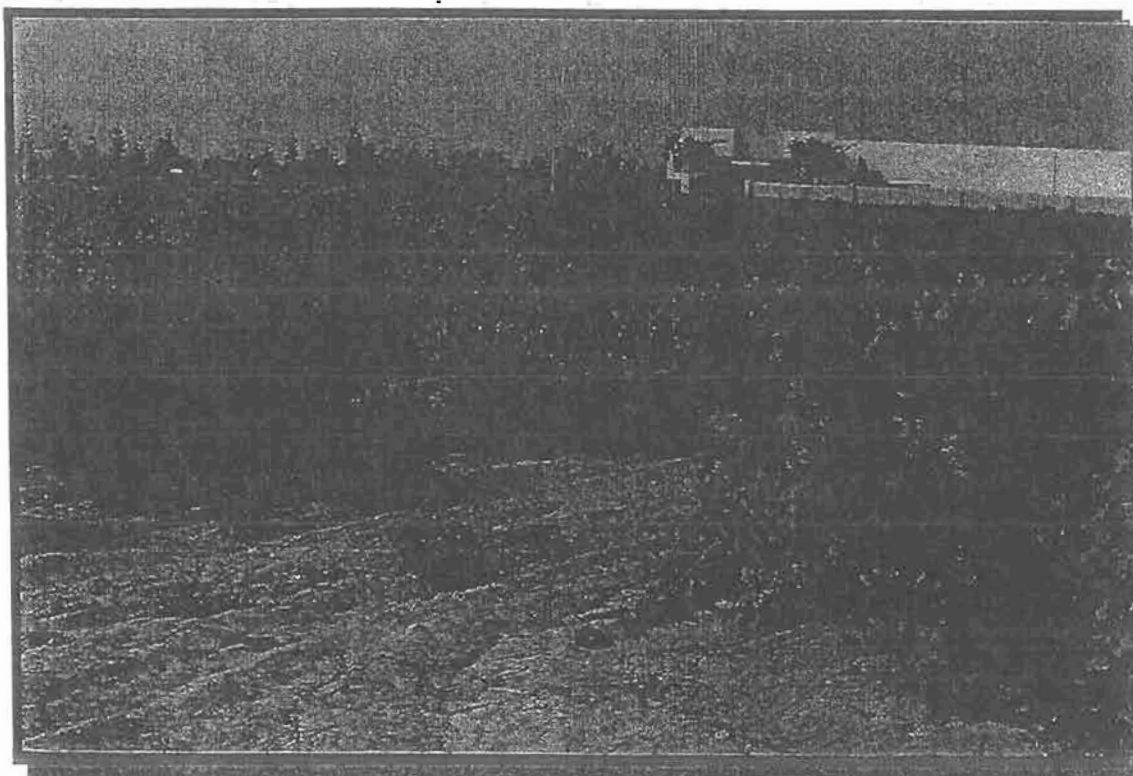


Figure 5. Photograph (2003) of typical habitat on western portions of the site in active viticulture. View looks northwest from near the southern edge of the site. Buildings are off-site to north.

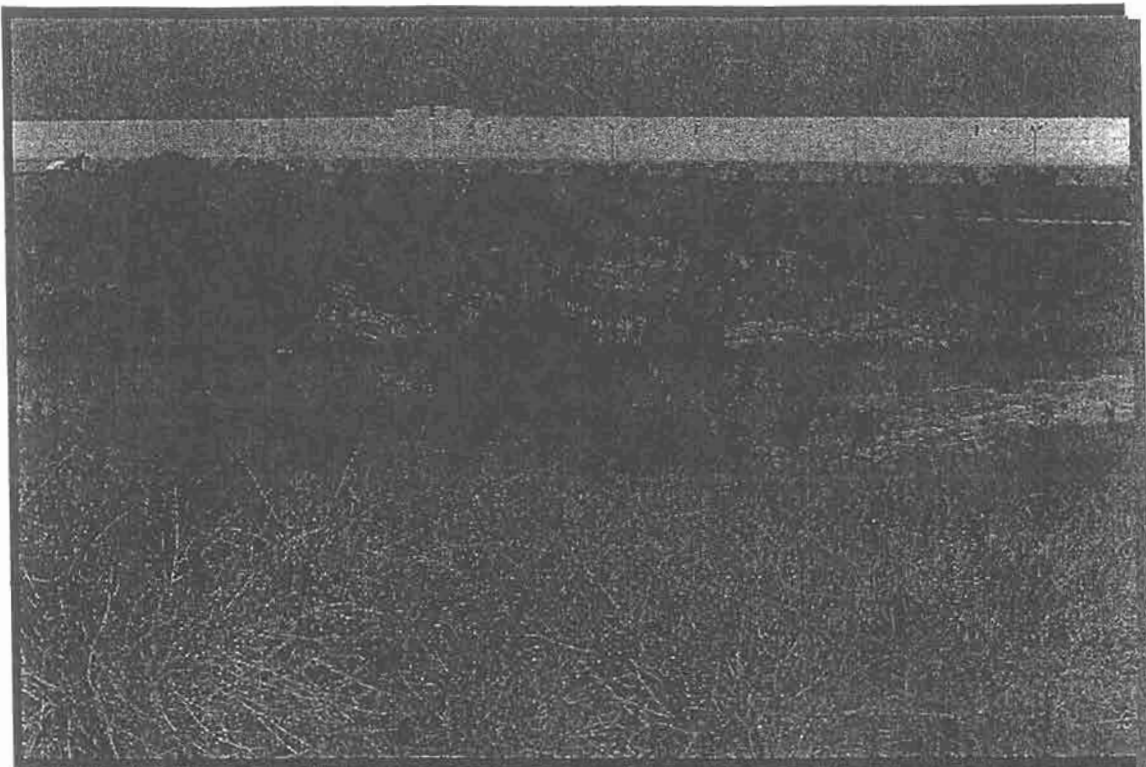


Figure 6. Photograph (2003) of excavated area in southern central portion of the site with Delhi sands in sides and Tujunga soils at bottom. Note the *Baccharis salicifolia* indicating poor drainage. Burrowing owl was common in this area.

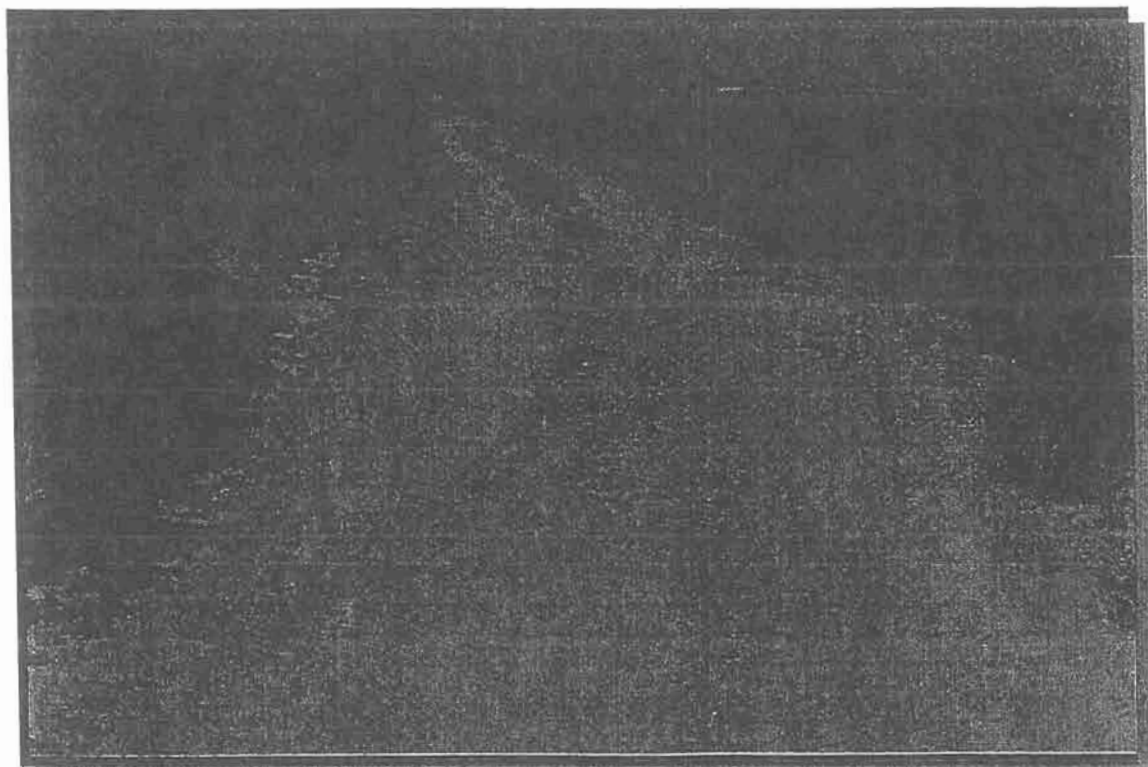


Figure 7. Photograph (2003) of dirt road along the southern edge of the survey site (central portion of the site). Heavy clay content is evidenced by hard, dried ruts in the road bed. Such open habitat may be attractive to adult male DSF, but the soil conditions are likely unsuitable for other life history stages.

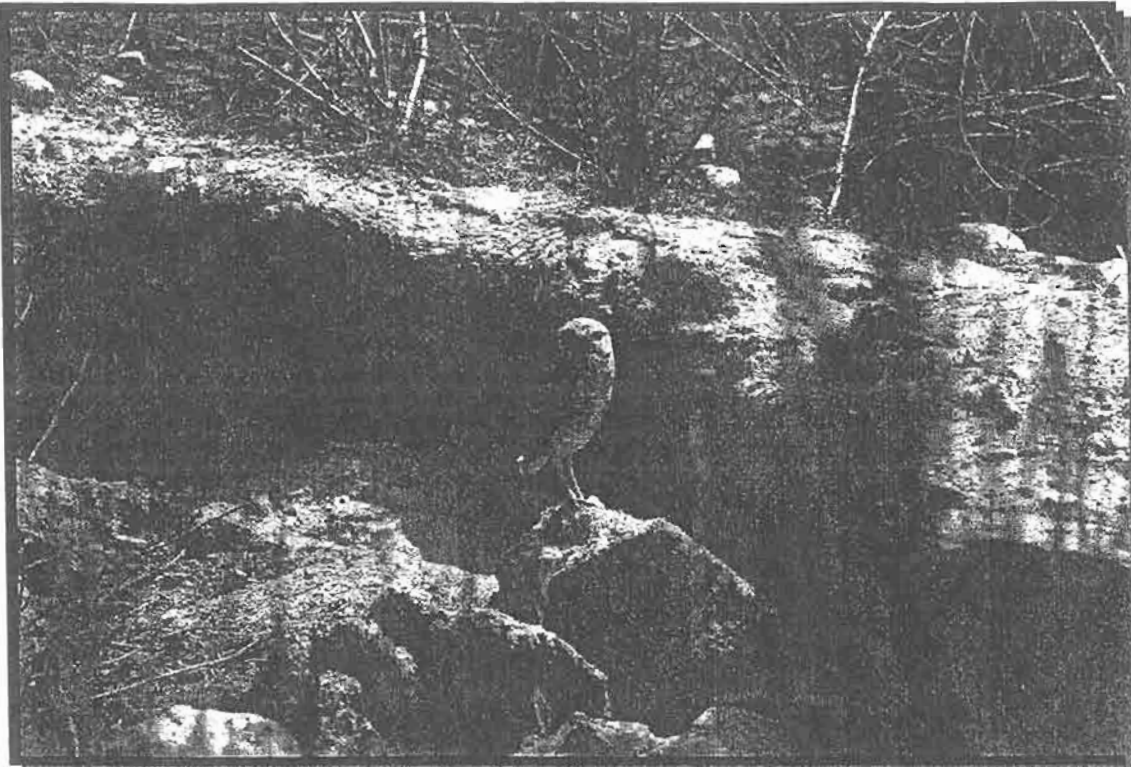


Figure 8. Photograph of Burrowing owl (*Athene cunicularia*) on the central portion of the site.



Figure 9. Photograph of juvenile San Diego horned lizard (*Phrynosoma coronatum blainvilliei*) is a sensitive species associated with sandy soil conditions. This species is unusually common on the subject site.

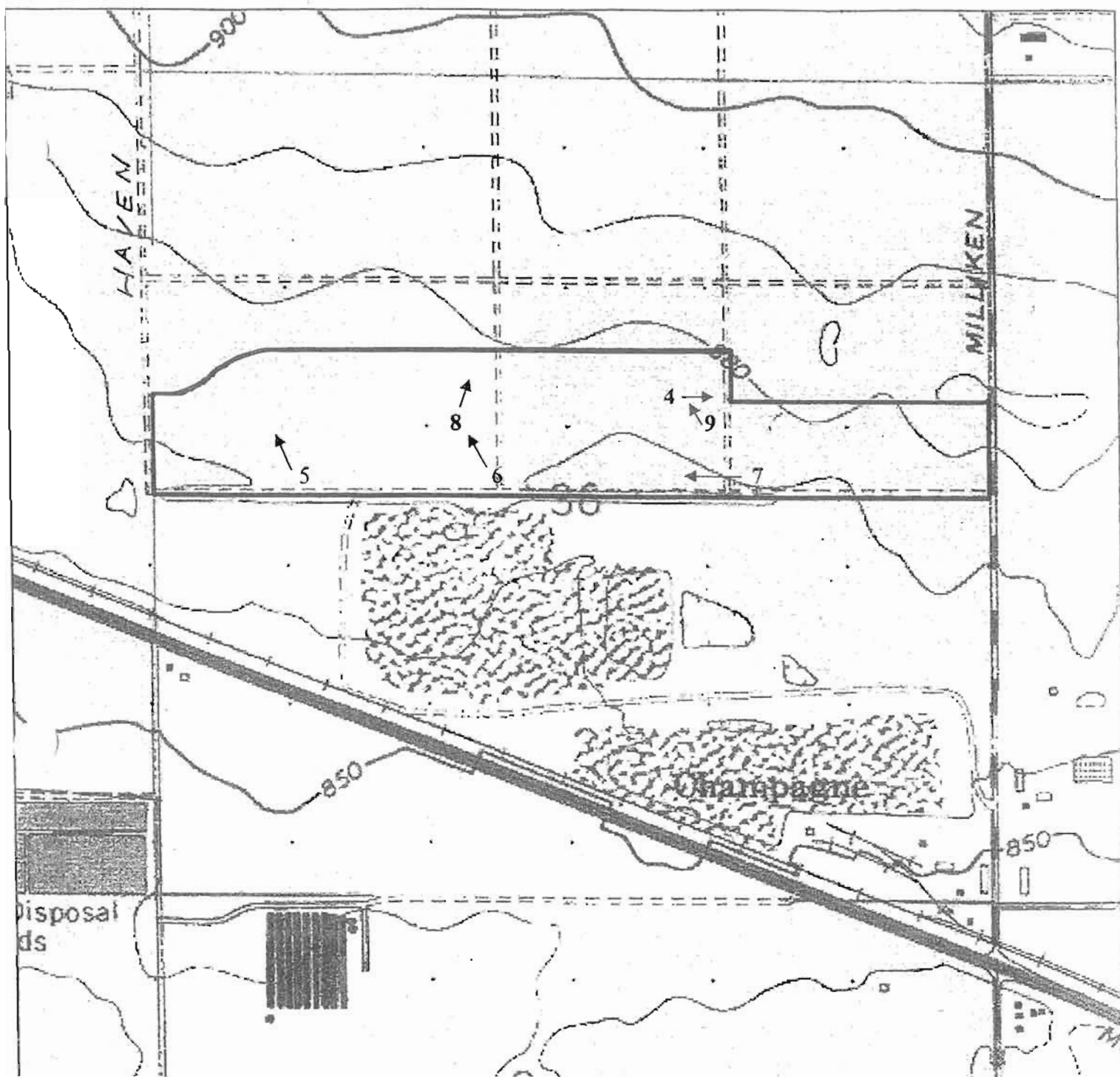


Figure 10. Approximate locations around survey site from which photographs were taken (base of arrows). Arrow indicates the direction a photograph was taken. Numbers next to the arrows indicate figure numbers (Figures 4-9).

8.0 APPENDIX

Appendix A

Table 1. Plant species encountered on the survey site.

<u>Family and common name</u>	<u>Species</u>
AMERANTHACEAE	
tumbleweed	<i>Amaranthus albus</i>
ASTERACEAE	
western ragweed	<i>Ambrosia acanthicarpa</i>
California sage	<i>Ariemisia californica</i>
mule fat	<i>Baccharis salicifolia</i>
horseweed	<i>Conyza canadensis</i>
telegraphweed	<i>Heterotheca grandiflora</i>
sunflower	<i>Helianthus annua</i>
prickly lettuce	<i>Lactuca serriola</i>
valley lessingia	<i>Lessingia glandulifera</i>
wreath plant	<i>Stephanomeria virgata</i>
BORAGINACEAE	
Rancher's fiddleneck	<i>Amsinkia intermedia</i>
popcorn flower	<i>Plagiobothrys</i> sp
Slender pectocarya	<i>Pectocarya linearis</i>
BRASSICACEAE	
shortpod mustard	<i>Hirschfeldia incana</i>
CHENOPODIACEAE	
Russian thistle	<i>Salsola tragus</i>
saltbush	<i>Atriplex canescens</i>
CUCURBITACEAE	
coyote gourd	<i>Cucurbita palmata</i>
EUPHORBIACEAE	
California croton	<i>Croton californicus</i>
spruce	<i>Euphorbia peplus</i>
FABACEAE	
locoweed	<i>Astragalus</i> sp
deer weed	<i>Lotus scoparius</i>
Spanish clover	<i>Lotus purshianus</i>
bur clover	<i>Medicago</i> sp
GERANIACEAE	
filaree	<i>Erodium cicutarium</i>
LAMINACEAE	
horehound	<i>Marubium vulgare</i>

MALVACEAE

mesa bush mallow

SALICACEAE

black willow

sandbar willow

arroyo willow

ONAGRACEAE

suncup

primrose

SOLANACEAE

jimson weed

tree tobacco

POLYGONACEAE

slender buckwheat

California buckwheat

VITACEAE

grape

ZYGOPHYLLACEAE

puncture vine

POACEAE

slender oat

red brome

schismus

*Malacothemmus fasciculatus**Salix gooddingii**Salix hindsiana**Salix lasiolepis**Camissonia bistorta**Oenothera sp**Datura wrightii**Nicotiana glauca**Eriogonum gracile**Eriogonum fasciculatum**Vitis vinifera**Tribulus terrestris**Avena barbata**Bromus madritensis**Schismus barbatus***Table 2. Insects encountered on the survey site.**

<u>Order</u>	<u>Family</u>	<u>Genus, species</u>
Diptera	Apioceridae	<i>Apiocera convergens</i>
	Asilidae	<i>Efferia albibarbis</i>
		<i>Mallophora faultrix</i>
		<i>Saropogon luteus</i>
		<i>Stenopogon brevisculus</i>
		<i>Stenopogon lomae</i>
		<i>Stenopogon rufibarbis</i>
		<i>Apheobantus sp</i>
		<i>Exoprosopa butleri</i>
		<i>Ligyra gazophylax</i>
		<i>Neodiplicampta mira</i>
		<i>Poecilognathus sp</i>
		<i>Rhynchanthrax caprea</i>
		<i>Thyridanthrax atrata</i>
		<i>Thyridanthrax pallida</i>
		<i>Toxophora pellucida</i>
		unidentified
	Bombyliidae	

Diptera	Bombyliidae	unidentified
		unidentified
		<i>Villa lateralis</i>
		<i>Villa moliter</i>
	Calliphoridae	<i>Phaenicia sericata</i>
	Conopidae	<i>Physocephala texana</i>
	Dolichopodidae	<i>Condyllostylus pilicornis</i>
	Muscidae	<i>Musca domestica</i>
	Mydidae	<i>Nemomydas pantherinus</i>
	Sarcophagidae	<i>Sarcophaga</i> sp
	Syrphidae	<i>Copostylum marginatum</i>
		<i>Copostylum quadratus</i>
		<i>Eupeodes volucris</i>
		<i>Eristalis aenea</i>
		<i>Eristalis latifrons</i>
		<i>Eristalis tenax</i>
		<i>Pseudodora clavatus</i>
		<i>Volucella mexicana</i>
	Tabanidae	<i>Tabanus punctifer</i>
	Tachinidae	<i>Archytas apicifer</i>
Hymenoptera		<i>Cylindromyia</i> sp
		<i>Eumachronychia</i>
		<i>Gymnosoma fuliginosum</i>
		<i>Peleteria</i> ?
	Therividae	<i>Thereva semitaria</i>
	Anthophoridae	<i>Anthophora urbana</i>
		<i>Melissodes</i> sp
		<i>Zylocopa varipuncta</i>
	Apidae	<i>Apis mellifera</i>
	Chrysididae	<i>Chrysis</i> sp
		<i>Parnopes edwardsii</i>
	Formicidae	<i>Iridomyrmex humilis</i>
		<i>Liometopum</i> sp
		<i>Meserpergandi</i> sp
		<i>Pogonomyrmex californicus</i>
	Gasteroptropidae	unidentified
	Halictidae	<i>Agapostemon</i> sp
	Megachilidae	<i>Megachile</i> sp
	Mutillidae	<i>Dasymutilla californica</i>
		<i>Dasymutilla clydenetra</i>
		<i>Dasymutilla coccineohirta</i>
		<i>Dasymutilla sackeni</i>
		<i>Pseudometheca</i> sp
	Pompilidae	<i>Ageniella</i> sp
		<i>Aporinellus</i> sp
		<i>Liris</i> sp

Hymenoptera**Pompilidae***Pepsis chrysothemis**Pepsis thysbe*

unidentified

Scoliidae*Campsomeris tolteca***Sphecidae***Ammophila sp**Ammophila aberti**Ammophila azteca**Bembix americana**Bicyrtes ventralis**Cerceris californicus**Cerceris femurrubrum**Chalybion californicum**Chlorion aerarium**Clypedon californicus**Cryptocheilus sp**Mimesia sp**Oxybelus pitanta**Oxybelus uniglumis**Philanthus multimaculatus**Prionyx foxi**Prionyx thomae**Scellphron caementarium**Sphex ichneumones**Tachysphex sp**Tachysphex sp**Taschytes elongatus**Eumenes bollii**Euodynerus annulatum**Polistes apachus**Polistes dorsalis**Polistes exclamens**Polistes fuscatus**Chrysopa sp***Neuroptera****Chrysidae**

unidentified

Mymerliontidae**Heteroptera****Corimelaenidae***Corimelaena sp***Largidae**

unidentified

Lygaeidae*Geocoris sp***Lygaeidae***Lygaeus kalmii**Nysius sp***Membracidae**

unidentified

Miridae*Lygus sp***Nabidae***Nabis sp***Pentatomidae***Chlorochroa uhleri**Thyanta sp**Trichopepla aurorae***Reduviidae***Phymata sp*

Heteroptera	Reduviidae	<i>Rhynocoris ventralis</i> <i>Sinea diadema</i> <i>Zelus</i> sp <i>Zelus renardii</i>
	Rhopalidae	<i>Arhyssus</i> sp
Coleoptera	Cerambycidae	<i>Parandra</i> sp
	Chrysomelidae	<i>Coscinoptera aeneipennis</i> <i>Diabrotica balteata</i> <i>Diabrotica unedecimpunctata</i> <i>Lema trilineata</i>
	Coccinellidae	<i>Adalia bipunctata</i> <i>Coccinella septempunctata</i> <i>Hippodamia convergens</i> unidentified
	Curculionidae	<i>Collops</i> sp
	Melyridae	<i>Macrosiagon flavipenne</i>
	Rhipiphoridae	<i>Cotinus texana</i>
	Scarabaeidae	<i>Elodes gracilis</i> unidentified
	Tenebrionidae	
Odonata	Aeshnidae	<i>Aeshna multicolor</i> <i>Anax junius</i>
	Coenagrionidae	<i>Argia</i> sp
	Libellulidae	<i>Libellula croceipennis</i> <i>Libellula saturata</i> <i>Pantala flavescens</i> <i>Pantala hymenaea</i> <i>Sympetrum corruptum</i> <i>Tramea lacerata</i> <i>Tramea onusta</i>
Lepidoptera	Danaidae	<i>Danaus plexippus</i>
	Hesperiidae	<i>Erynnis funeralis</i> <i>Heliopterus ericitorum</i> <i>Hylephila phyleus</i> <i>Pyrgus albescens</i>
	Lycaenidae	<i>Brephidium exilis</i> <i>Everys amyntula</i> <i>Hemiargus ceranus</i> <i>Leptotes marina</i> <i>Plebejus acmon</i> <i>Strymon melinus</i>
	Noctuidae	<i>Acontia sedata</i> <i>Schinia sexplagiata</i> <i>Schinia scarletina</i>
	Nymphalidae	<i>Junonia coenia</i> <i>Vanessa cardui</i> <i>Vanessa virginiensis</i>

Lepidoptera	Pieridae	<i>Colias eurytheme</i>
		<i>Nathalis iole</i>
		<i>Pieris rapae</i>
		<i>Pontia protodice</i>
	Pyralidae	unidentified
Orthoptera		unidentified
	Sesiidae	<i>Paranthrene robiniae</i>
	Sphingidae	<i>Hyles lineata</i>
	Acrididae	<i>Derotmema saussuraenum</i>
		<i>Melanoplus</i> sp
		<i>Psoloessa thamnogaea</i>
		<i>Schistocerca</i> sp
		<i>Schistocerca nitens</i>
		<i>Trimerotropis californica</i>
		<i>Trimerotropis pallidipennis</i>
Mantodea	Mantidae	<i>Iris oratoria</i>
		<i>Litaneutria minor</i>
		<i>Stagmomantis californica</i>

Table 3. Vertebrate species encountered on the survey site.

<u>Common name</u>	<u>Species</u>
Reptiles	
Side-blotched lizard	<i>Uta stansburiana</i>
Western fence lizard	<i>Sceloporus occidentalis</i>
San Diego horned lizard	<i>Phrynosoma coronatum</i>
Coachwhip	<i>Masticophis flagellum</i>
Birds	
White-throated swift	<i>Aeronautes saxatalis</i>
Burrowing owl	<i>Athene cunicularia</i>
Red-tailed hawk	<i>Buteo jamaicensis</i>
Anna's hummingbird	<i>Calypte anna</i>
Lesser goldfinch	<i>Carduelis psaltria</i>
House finch	<i>Carpodacus mexicanus</i>
Turkey vulture	<i>Cathartes aura</i>
American crow	<i>Corvus brachyrhynchos</i>
American Kestrel	<i>Falco sparverius</i>
Northern mockingbird	<i>Mimus polyglottos</i>
California towhee	<i>Pipilo crissalis</i>
Blue-gray gnatcatcher	<i>Polioptila caerulea</i>
Western meadowlark	<i>Sturnella neglecta</i>
Western kingbird	<i>Tyrannus verticalis</i>
Morning dove	<i>Zenaidura macroura</i>

Mammals

Desert cottontail

California ground squirrel

Coyote

Botta's pocket gopher

Sylvilagus audubonii

Spermophilus beecheyi

Canis latrans

Thomomys bottae

Appendix B

USFWS Correspondence



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ecological Services
Carlsbad Fish and Wildlife Office
6010 Hidden Valley Road
Carlsbad, California 92009



JUN 8 0 2004

Dear Delhi Sands Flower-loving Fly Survey Permit Holders:

Subject: Guidelines for Conducting Presence/Absence Surveys for the Delhi Sands Flower-loving Fly

Because of our ongoing review of the best available scientific and commercial information on the biology of the Delhi Sands flower-loving fly (*Rhaphiomidas terminatus abdominalis*) (DSF), we are modifying the Interim General Survey Guidelines for the Delhi Sands Flower-loving Fly (USFWS 1996).

The 1996 interim survey guidelines recommended that site surveys be conducted at least twice a week from August 1 to September 20 for a 2-year period. In 2003, we recommended that site surveys start by July 15 and continue to September 20 (June 25, 2003, letter from USFWS to DSF permit holders). Our review of the positive DSF survey data contained in section 10(a)(1)(A) permit reports through 2002 demonstrate that, at least, 10 DSF observations were made at various sites between July 1 to August 1, 2002, including three observations between July 1 and July 15, 2002. Other research observed adult DSF almost every day from July 15, the date surveys were conducted, to August 1 over a 2-season study (Kingsley 1996). This information suggests that adult DSF may be observed prior to July 15 and as early as July 1 under appropriate conditions.

To better ensure that site surveys are conducted to optimize observations of DSF and better document the presence/absence of this species, we recommend surveys be conducted at least two times per week from July 1 to September 20 for 2 consecutive years under suitable conditions.

We recognize that these recommendations to improve the survey guidelines for DSF will be difficult to implement given the imminent onset of the survey period for DSF. For that reason, not implementing this particular recommendation will not be used as the sole basis for finding any particular survey as deficient. We will continue to consider all of the best available information, including site surveys and habitat assessments, in making our determination regarding the presence or absence of DSF at a particular project site.

For the 2005 season, we intend to increase the recommended survey frequency from two times per week to three times per week, and to decrease the survey rate from 12.5 acres per hour per biologist to a slower rate to better ensure detection of DSF. To the extent that increased survey frequencies and slower survey rates can be voluntarily incorporated into your field surveys for this field season, we would appreciate receiving this information to better improve the survey protocol for 2005.

If you have questions regarding this letter or any other permitting issues, please contact Joel Pagel or Dan Marquez of my staff (760/431-9440).

Sincerely,

Jim A. Bartel
Field Supervisor

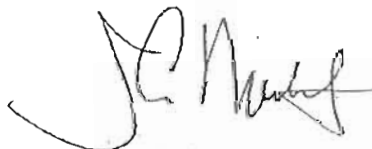
TAKE PRIDE
IN AMERICA 

We also request that you specify names and permit numbers of all individuals who conducted permitted fly activities in relation to indicated hours of survey activity. If supervised individuals are obtaining field experience while accompanying independently authorized individuals, please include names, specific dates, and hours in the report. Survey reports that do not contain all of the information as required may not be accepted by the Service, and may affect the future status of your permit. The two most common deficiencies include the following: 1) inadequate USGS topographic maps that are not to scale, do not include the quad name, or do not include a clear depiction of positive documented sightings of the fly (without the submission of clear and adequate maps, we are unable to accurately enter data into our GIS database); and 2) lack of specific required reporting information, including the start and stop times of each survey day, size and quality of habitat surveyed, and air temperature and wind conditions.

We require that permittees submit clear and adequate information to the Service. The information that you provide in your survey reports serves an important role in the recovery of the species. Therefore, we will be reviewing all reports for compliance with the terms and conditions of your recovery permit and survey guidelines.

Additionally, it is your responsibility to ensure that everyone on your List understands and follows the conditions of your permit. Failure of any member on the List to follow permit conditions may result in suspension or revocation of the permit. If you have any questions about this letter or any part of the permit process, please contact Daniel Marquez, the Recovery Permits Coordinator, at 760-431-9440 (ext. 225), or Joel (Jeep) Pagel, Division Chief of Listing and Recovery (ext. 277).

Sincerely,

A handwritten signature in black ink, appearing to read "Jim A. Bartel", written over a horizontal line.

Jim A. Bartel
Field Supervisor

the Endangered Species Act. Special terms and conditions addressing specific activities that may be conducted are attached to the recovery permit. You, the permittee, and every person included on your "List of Authorized Individuals" (List), shall follow all of the terms and conditions included in the permit for respective activities. We recommend that you ensure that everyone on the List reviews the permit before the start of each survey season. Additionally, you are required to submit all necessary reporting documents to our office. With this letter, we wish to call your attention specifically to the pre-survey and post-survey reporting requirements for the fly.

Pre-Survey Notifications:

For tracking all fly activities that are conducted during each flight season and to avoid duplication of survey activities, all pre-survey notifications for conducting fly activities pursuant to your recovery permit must be received in writing by the Carlsbad Fish and Wildlife Office (CFWO), 6010 Hidden Valley Road, Carlsbad, California 92009, at least 10 days prior to commencing such activities (or as soon as you are notified by the contractor prior to the season). Please remember that the following information should be included in all pre-survey notifications: 1) an explanation of the purpose of the study and a clear description of methods, including the names of field personnel, their recovery permit number, the extent of area surveyed, and the number and dates of surveys; 2) the number of acres proposed to be surveyed; and 3) at a minimum, a non enlarged, 1:24,000 scale U.S. Geological Survey (USGS) topographic map (quad) depicting the location of the survey site(s). Please include the County and quad name on the map.

If any deviation to fly activities as specified in the terms and conditions of your permit or the survey guidelines for the fly are anticipated, you should document these deviations in your pre-survey notification. Written approval from our office should be obtained to ensure that proposed deviations are approved and that your final "45-day" survey report will be accepted. Please keep in mind, that "non-survey" monitoring activities that may result in take of the fly are not authorized unless a detailed proposal is submitted by the permittee and approved in writing by our office.

45-day Survey Reporting:

The permittee shall implement all of the actions included in the *U.S. Fish and Wildlife Service General Survey Guidelines for the Delhi Sands Flower-loving Fly* (Guidelines; revision pending), including the submission of a written report summarizing the data from the fly surveys performed under this permit. This report is to be sent to the CFWO within 45 calendar days after completing the last field visit of the season at each project site. Each report should include all of the specific reporting requirements as specified in the survey guidelines. Additionally, all post-season 45-day reports must include a signed affidavit from all contributing permittees confirming that their data was accurately incorporated.



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ecological Services
Carlsbad Fish and Wildlife Office
6010 Hidden Valley Road
Carlsbad, California 92009



In Reply Refer To:
1-6-04-NTP-588

APR 30 2004

Subject: Changes to the Delhi Sands Flower-Loving Fly Recommended Survey Guidelines

Dear Permittees:

Last year, in a letter dated June 25, 2003, we, the U.S. Fish and Wildlife Service (Service), changed the recommended start date for presence/absence surveys for the Delhi sands flower-loving fly (*Rhaphiomidas terminatus abdominalis*; "fly") from August 1 to July 15 for the 2003 flight season. This letter is to inform you that we are modifying the start date for the Delhi sands flower-loving fly survey season to July 1. This change is based on previous years of observation resulting in what we consider the best available scientific information. This letter also serves as a reminder of your pre- and post-survey reporting responsibilities.

I. Survey Season

The 2003 survey season start date changed because in 2002, flies were reported as early as July 1. Although the drought conditions of 2002 may have caused the flight season to start unusually early, multiple fly observations on initial surveys during previous years, under similar environmental conditions, suggest that our former recommended start date of August 1 may be too late in the flight period. Survey results from the early part of the 2003 flight season confirmed that adult flies are active prior to August 1. We had at least 10 observations of individual flies between July 15, 2003, and August 1, 2003. Therefore, we now recommend that presence/absence surveys start July 1, and end September 20.

We will be issuing new survey guidelines prior to the 2004 flight season, and distributing them to all permittees and jurisdictions where Delhi soils occur. We recommend that you request authorization for any guideline deviations at least 2 weeks prior to survey implementation, and advise you to closely adhere to the terms and conditions of your permit regarding variations in methodology.

II. Reporting Requirements

Because surveys for the fly may result in "take," surveyors should obtain authorization from the Service to avoid a violation of section 9 of the Endangered Species Act of 1973 (et seq.).

Typically, we authorize surveys through the recovery permit process under section 10(a)(1)(A) of



Ken H. Osborne (permit #TE837760-6)

6675 Avenue Juan Diaz,

Riverside, CA 92509

(909) 360-6461

Euproserpinus@msn.com

July 2, 2004

Attn: Mr. Daniel Marquez,
USFWS Carlsbad Field Office
6010 Hidden Valley Road
Carlsbad, CA 92009
Facsimile (760) 431-9624

To Whom It May Concern:

I write to notify you of intent to conduct adult surveys for Delhi Sands Giant Flower-loving fly (DSF, *Rhaphiomidas terminatus abdominalis*) on a series of sites for this year 2004 season. All surveys commence on the week of July 1. The survey sites are as follows, and maps (maps included with this fax) will be presented with this document when mailed by regular postal service. At times, additional permitted biologists, associated with me, may participate to cover portions of the survey effort.

- 1) 17-acre site, Bloomington, located on the north side of Slover Avenue, 330 feet west of Locust Avenue, west to the Laurel Avenue extension, and north to the railroad tracks. Second year survey effort. This survey is being undertaken on contract with Mr. John Boruchin, Boruchin Enterprises, 8408 Sierra Ave., Fontana, CA 92335
- 2) 103-acre site north of the Milliken Sanitary Landfill, Ontario. Second year survey effort. This survey is being undertaken on contract with the Solid Waste Management Division County of San Bernardino 222 West Hospitality Lane, 2nd Floor, San Bernardino, CA 92415-0017.
- 3) 13.88-acre site, south side of Slover Avenue, between Laurel and a point approximately 330 feet west of Locust Avenue, Bloomington. Second year survey effort. This survey is being undertaken on contract with Norman and Mary Lakey, Lakey Real Estate, 463 Italia St., Covena CA 91723.
- 4) 3-acre site, south side of Slover Avenue, between Locust avenue and a point approximately 330 feet west of Locust Avenue, Bloomington. Second year survey effort. This survey is being undertaken on contract with Norman and Mary Lakey, Lakey Real Estate, 463 Italia St., Covena CA 91723.
- 5) 2.87-acre site, south side of Slover Avenue, between Laurel and Alder Avenue, Bloomington (17847 Slover Avenue). First year survey effort. This survey is

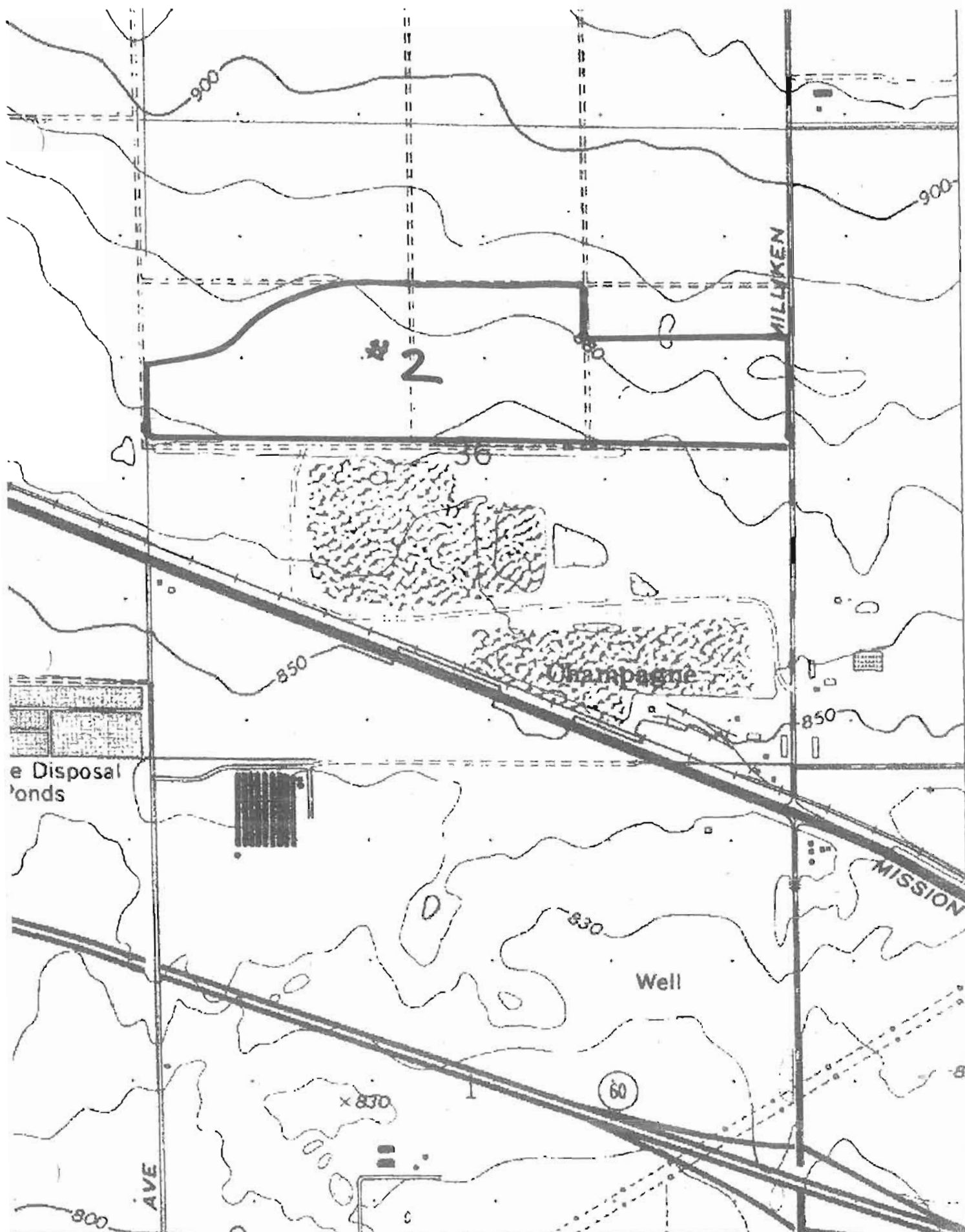
being undertaken on contract with All Cities Permit Services, P.O. Box 666
Fontana, CA 92334.

- 6) 27.68-acre site (approximately), **Bloomington**, located on the north side of Slover Avenue, several parcels between Alder Avenue and Laurel Avenue (and two parcels just east of Laurel Avenue, **an** additional parcel east of Alder Avenue and just south of the railroad tracks. First year survey effort. This survey is being undertaken on contract with Mr. John Boruchin, **Boruchin Enterprises, 8408** Sierra Ave. Fontana, CA 92335
- 7) 4.62-acre site, 2457 East Riverside Drive, Ontario, located on the **north** side of East Riverside Avenue. First year survey effort. This survey is being **undertaken** on contract with the Office of the San Bernardino County Superintendent of Schools, 601 North E Street, San Bernardino, CA 92410.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Ken H. Osborne". The signature is stylized with a large, sweeping "K" and "O".

Ken H. Osborne



Appendix C

Field Notes

Date 7/1/04 Time 1000 - 1400
Miles 95539 on site

Job SBWM

Weather: Temp 71 - 81 Wind 0 - 2 Cloud cover 10% clouds Rain None
74 @ noon 90% to 10 Clear by 11 am

Habitat: Abiotic: Soil type _____

Same condition Surface cover _____

as
previous
year

Compaction _____

Organic content _____

Exposure by rodents _____

Basement materials _____

Other (refuse, dumping, fill etc.) _____

Biological elements:

Rhaphiomidas terminatus ? _____ time _____ sex _____ numbers _____

Other arthropods (general) Bombyliids ☒ Asilids ☒
Mydids ☒ Apiocerids _____ Sphecids ☒
Chrysidids _____
Other insects of note Mutillids, Myrmecini

Plants: *Croton* _____ *Telegraph weed* _____ *Eriogonum fasciculatum* _____
Eriogonum thurberi _____ other *Eriogonum* _____ *Oenothera* _____
Camissonia _____ *Eriastrum* _____
Others: _____

Vertebrates

Uta, Great Horned lizards
Mead, Maki, Melaph, Leona, Swallow,
Crab sparrow, Kingbird, Red tail hawk

Date 7/2/64 Time 1000 - 1140

Job SBWPI

Miles 95594 site 123a - 2a
1195596

Weather: Temp 73-84 Wind 0-5 Cloud cover 0 Rain 0

Habitat: Abiotic: Soil type _____

Surface cover _____

Compaction _____

Organic content _____

Exposure by rodents _____

Basement materials _____

Other (refuse, dumping, fill etc.) _____

Biological elements:

Rhaphiomidas terminatus ? _____ time _____ sex _____ numbers _____

Other arthropods (general) Bombyliids ☒ Asilids ☒

Mydids ☒ Apiocerids _____ Sphecids ☒

Chrysidids _____

Other insects of note Myrmecinae (ants), Mutillids, Hymenoptera

Plants: *Croton* _____ Telegraph weed _____ *Eriogonum fasciculatum* _____

Eriogonum thurberi _____ other *Eriogonum* _____ *Oenothera* _____

Camissonia _____ *Eriastrum* _____

Others: _____

Vertebrates

Uta, Coast Horned Lizard, Road Runner

Partridge & Barn Swallow Owl

Date 7/3/04 Time 1125 - 1412

Job SWM

Miles 95639

W/ Rick Rogers + 1000.

Weather: Temp 70-75 Wind 0-5 mph

Cloud cover clear Rain 4x 1230 - 6x 1400

Habitat: Abiotic: Soil type _____

Surface cover _____

Compaction _____

Organic content _____

Exposure by rodents _____

Basement materials _____

Other (refuse, dumping, fill etc.) _____

Biological elements:

Rhaphiomidas terminatus ? _____ time _____ sex _____ numbers _____

Other arthropods (general) Bombyliids _____ Asilids _____

Mydids _____ Apicerids _____ Sphecids _____

Chrysidids _____

Other insects of note _____

Plants: *Croton* _____ Telegraph weed _____ *Eriogonum fasciculatum* _____

Eriogonum thurberi _____ other *Eriogonum* _____ *Oenothera* _____

Camissonia _____ *Eriastrum* _____

Others: _____

Vertebrates _____

Date 7/5/64Time 1210 - 1400Job SRMMiles 95706Weather: Temp 8 ^{by M. Van Damm} -90Wind 0 - 5Cloud cover 0Rain 0

Habitat: Abiotic:

Soil type _____

Surface cover _____

Compaction _____

Organic content _____

Exposure by rodents _____

Basement materials _____

Other (refuse, dumping, fill etc.) _____

Biological elements:

Rhaphiomidas terminatus ? _____ time _____ sex _____ numbers _____

Other arthropods (general) Bombyliids ☒ Asilids ☒
Mydids ☒ Apiocerids _____ Sphecids ☒
Chrysidids _____
Other insects of note Mutillids

Plants: *Croton* _____ *Telegraph weed* _____ *Eriogonum fasciculatum* _____
Eriogonum thurberi _____ other *Eriogonum* _____ *Oenothera* _____
Camissonia _____ *Eriastrum* _____
Others: _____

Vertebrates

Burrowing Owls (2)

Date 7/9/2004 Time 1000 to 1400

Job SBWM

Miles

Biologists R. Rogers / Brian Harris

Weather: Temp 73-91 Wind 0- Cloud cover 0 Rain 0

Comments:

Biological elements:

Rhaphiomidas terminatus ? _____ time _____ sex _____ numbers _____

Other arthropods (general) Bombyliids ☒ Asilids ☒
Mydids ☒ Apiocerids _____ Sphecids ☒
Chrysidids _____ Mutilids ☒ Scoliids _____
Mymerleontids ☒ Other insects of note _____

Plants: *Croton* _____ *Telegraph weed* _____ *Eriogonum fasciculatum* _____
Eriogonum thurberi _____ other *Eriogonum* _____ *Oenothera* _____
Camissonia _____ *Eriastrum* _____
Others: _____

Vertebrates

Coast Hatched Wren

Date 7/11/04 Time 1000 to 1400 Youngs Job 5B4M

Biologists K Hu, D. Yano 1345-1400 K Hu

Weather: Temp 81-76 Wind 0 Cloud cover 0 Rain 0
 92° 11' 45"

Comments:

1. Introduction
 2. Background
 3. Methodology
 4. Results
 5. Conclusion
 6. References
 7. Appendix
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 10. Summary
 11. Abstract
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 222. Keywords
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 227. Summary
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 243. Keywords
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 247. Table of Contents
 248. Summary
 249. Abstract
 250. Keywords
 251. References
 252. Appendix
 253. Index
 254. Table of Contents
 255. Summary
 256. Abstract

Biological elements:

<i>Rhaphiomidas terminatus</i> ?	time	sex	numbers
----------------------------------	------	-----	---------

Other arthropods (general) Bombyliids _____ Asilids _____
 Mydids _____ Apiocerids _____ Sphecids _____
 Chrysidids _____ Mutilids _____ Scoliids _____
 Mymerleontids _____ Other insects of note _____

Plants: *Croton* _____ Telegraph weed _____ *Eriogonum fasciculatum* _____
Eriogonum thurberi _____ other *Eriogonum* _____ *Oenothera* _____
Camissonia _____ *Eriastrum* _____
 Others: _____

Vertebrates

Date 7/13/64 Time 1155 to 1400 Regen Job SBWM
Miles 96141 1155-1230/1315-1400 Keto
Biologists 1440 12 Regen

Weather: Temp 96-102 Wind 0-5/10 Cloud cover 0 Rain 0

Comments:

Biological elements:

Rhaphiomidas terminatus ? _____ time _____ sex _____ numbers _____

Other arthropods (general) Bombyliids ☒ Asilids ☒
Mydids ☒ Apiocerids _____ Sphecids ☒
Chrysidids _____ Mutilids ☒ Scoliids _____
Mymarleontids ☒ Other insects of note _____

Plants: *Croton* _____ *Telegraph weed* _____ *Eriogonum fasciculatum* _____
Eriogonum thurberi _____ other *Eriogonum* _____ *Oenothera* _____
Camissonia _____ *Eriastrum* _____
Others: _____

Vertebrates

Date 7/16/04 Time 1000 to 1400

Job 5BWM

Miles

Biologists R. Rogers, R. L. Harris

Weather: Temp 2.93 Wind 0-2 Cloud cover 502 Rain 0

Comments:

This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There are approximately 20 lines visible. The paper appears slightly aged or off-white. There is no handwriting or other markings on the page.

Biological elements:

<i>Rhaphiomidas terminatus</i> ?	time	sex	numbers
----------------------------------	------	-----	---------

Other arthropods (general) Bombyliids Asilids
Mydids Apiocerids Sphecids
Chrysidids Mutlids Scoliids
Mymerleontids Other insects of note

Plants: *Croton* _____ Telegraph weed _____ *Eriogonum fasciculatum* _____
Eriogonum thurberi _____ other *Eriogonum* _____ *Oenothera* _____
Camissonia _____ *Eriastrum* _____
 Others: _____

Vertebrates

Date 7/20/04 Time 1000 to 1400 NR. Job SBW.H
Miles 96508 1000 1320 NR
Biologists K.H., R. Ryan. (96-2)

Weather: Temp 86-98 Wind 0-5 Cloud cover 0 Rain 0

Comments:

Dip 25, 2, 15 latifrons, 5, 54, 14, 7, 35
H. 7, 1, 2, 8, 6, 5, 15, 64, 22, 42, 122, 9,
38, 68, 76, 4
12, 13, D. californica, D. pusilliventris,
Orthops 1, 3, 4 H. 27, 8, 13
Cope, Puntia, Alticola, B. 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100

Biological elements:

Rhaphiomidas terminatus ? time sex numbers

Other arthropods (general) Bombyliids Asilids
Mydids Apiocerids Sphecids
Chrysidids Mutilids Scoliids
Mymaroleontids Other insects of note

Plants: *Croton* Telegraph weed *Eriogonum fasciculatum*
Eriogonum thurberi other *Eriogonum* *Oenothera*
Camissonia *Eriastrum*
Others:

Vertebrates

5 burrowing owls, etc.

Date 7/21/04 Time 1124 to 1145

Job SRWM

Miles 96547

Biologists KHO, M Van Dam

Weather: Temp 86-90 Wind / Cloud cover / Rain /

Comments:

Asp 2, 5, 7, 13 Hym 1, 2, 7, 13, 12, 22, 29
Dip 10
Cyn = 12, 13, 14
Orth 1, 2, 3, 9

Biological elements:

Rhaphiomidas terminatus ? time sex numbers

Other arthropods (general) Bombyliids Asilids
Mydids Apocerids Sphecids
Chrysidids Mutilids Scoliids
Mymerleontids Other insects of note

Plants: *Croton* Telegraph weed *Eriogonum fasciculatum*
Eriogonum thurberi other *Eriogonum* *Oenothera*
Camissonia *Eriastrum*
Others:

Vertebrates

Biologists

Weather: Temp 137 Wind 2.5 mph Cloud cover 0 Rain 0

[illegible]

<i>Rhaphiomidas terminatus</i> ?	time	sex	numbers
----------------------------------	------	-----	---------

Other arthropods (general) Bornbyliids Asilids
Mydids Apiocerids Sphecids
Chrysidids Mutillids Scoliids
Mymarleontids Other insects of note

Plants: Croton Telegraph weed Eriogonum fasciculatum
Eriogonum thurberi other Eriogonum Oenothera
Camissonia Eriastrum
 Others: _____

Vertebrates

Vertebrates Pacific horn toad, 7th, ~~Red~~ Red tail hawk
doves

Date 7/24/04 Time 1205 to 1400
Miles 1470 96696
Biologists 1470

Job SIRUM

Weather: Temp 92-95 Wind / Cloud cover / Rain /

Comments:

Biological elements:

Rhaphiomidas terminatus ? _____ time _____ sex _____ numbers _____

Other arthropods (general) Bombyliids _____ Asilids _____
Mydids _____ Apocerids _____ Sphecids _____
Chrysidids _____ Mutilids _____ Scoliids _____
Mymerleontids _____ Other insects of note _____

Plants: *Croton* _____ *Telegraph weed* _____ *Eriogonum fasciculatum* _____
Eriogonum thurberi _____ other *Eriogonum* _____ *Oenothera* _____
Camissonia _____ *Eriastrum* _____
Others: _____

Vertebrates

Date

Miles

Biologists

Time

to

Job

Weather: Temp

Wind

Cloud cover

Rain

Comments:

Biological elements:

Rhaphiomidas terminatus ? time sex numbers

Other arthropods (general)

Bombyliids

Asilids

Mydids

Apoecids

Sphecids

Chrysidids

Mutilids

Scolids

Myrmecotids

Other insects of note

Plants:

Croton

Telegraph weed

*Eriogonum fasciculatum**Eriogonum thurberi*other *Eriogonum**Oenothera**Camissonia**Eriastrum*

Others:

Vertebrates

Horn Toad, etc., ground squirrel

Date 7/26/04 Time 1045 to 1118
Miles 96885
Biologists KH

Job 5844

Weather: Temp 77-91 Wind — Cloud cover — Rain —

Comments:

Biological elements:

Rhaphiomidas terminatus ? time sex numbers

Other arthropods (general) Bombyliids — Asilids —
Mydids — Apiocerids — Sphecids —
Chrysids — Mutilids — Scolids —
Mymerleontids — Other insects of note —

Plants: *Croton* — Telegraph weed — *Eriogonum fasciculatum* —
Eriogonum thurberi — other *Eriogonum* — *Oenothera* —
Camissonia — *Eriastrum* —
Others: —

Vertebrates

Date July 27, 2004 Time 10:00 to 2:00

Job SBWM

Miles

Biologists Matthew Van Son

Weather: Temp 71°F-96°F Wind 1 mph - 5 mph Cloud cover 6 Rain 0

Comments:

Both adult and juvenile Pacific Horn toads
were seen. A large breeding colony is
present in ~~south~~ ^{eastern} half of

Biological elements:

Rhaphiomidas terminatus ? time sex numbers

Other arthropods (general) Bombyliids ☒ Asilids ☒
Mydids ☒ Apiocerids ☒ Sphecids ☒
Chrysidids ☒ Mutilids ☒ Scoliid ☒
Myrmecotids ☒ Other insects of note

Plants: *Croton* ☒ Telegraph weed ☒ *Eriogonum fasciculatum* ☒
Eriogonum thurberi ☒ other *Eriogonum* ☒ *Oenothera*
Camissonia ☒ *Eriastrum* ☒
Others:

Vertebrates

Pacific Horn toad, lts, Meadow Lark,
Red tail Hawk, l

Date July 28, 2014 Time 10:00 to 14:00

Job SBWN

Miles

Biologists

Weather: Temp 74°-91°F Wind 1-5 mph Cloud cover 0 Rain 0

Comments:

Biological elements:

<i>Rhaphiomidas terminatus</i> ?	time	sex	numbers
----------------------------------	------	-----	---------

Other arthropods (general) Bombyliids ☒ Asilids ☒
Mydids ☒ Apiocerids ☐ Sphecids ☒
Chrysidids ☐ Mutilids ☒ Scoliids ☐
Mymmerleontids ☒ Other insects of note ☐

Plants: *Croton* ☒ Telegraph weed ☒ *Eriogonum fasciculatum* ☒
Eriogonum thurberi _____ other *Eriogonum* ☒ *Oenothera* _____
Camissonia _____ *Eriastrum* _____
 Others: _____

Vertebrates

Vertebrates Pacific horn toad, etc

Date July 20, 2004 Time 10:00 am to 2:00 pm

Job S B N M.

Miles 16 for Van Nuys

Biologists Rick Rogers & M. Van Nuys

Weather: Temp 74-89 Wind 2 mph. Cloud cover 0 Rain 0

Comments:

Apiocera convergens ♂ & ♀
Mallophora faurix
Ammophila aberti
prionyx foxi
Agelaiella sp.
Eumenes bolli
Chlorion cyanum
Anthophora urbana
Nemomydas pantherinus
Dasynotilla sackenii ♀
D. coccineohirta ♂ (many)
D. californica ♂

Biological elements:

Rhaphiomidas terminatus ? time _____ sex _____ numbers _____

Other arthropods (general) Bombyliids ☒ Asilids ☒
Mydids ☒ Apiocerids ☒ Sphecids ☒
Chrysidids _____ Mutilids ☒ Scolids _____
Mymerleontids _____ Other insects of note _____

Plants: Croton _____ Telegraph weed _____ Eriogonum fasciculatum _____
Eriogonum thurberi _____ other Eriogonum _____ Oenothera _____
Camissonia _____ Eriastrum _____
Others: _____

Vertebrates

lata

Date Aug 3, 2004 Time 10:15 to 14:00
Miles 0 (98696 km) 1015 - 1135 (720) 1 < 40
Biologists M Van Nam + 1 < 40

Job SBWM

Weather: Temp 70°-86° Wind 5-7 mph Cloud cover 100% Rain 0

Here burning off.

Sun just coming out @ 1015

Comments:

Marina laxa burning off @ 1015.

Warm and humid along AM river.

Biological elements:

Rhaphiomidas terminatus ? _____ time _____ sex _____ numbers _____

Other arthropods (general) Bombyliids _____ Asilids _____
Mydids _____ Apocerids _____ Sphecids _____
Chrysidids _____ Mutilids _____ Scolids _____
Mymerleontids _____ Other insects of note _____

Plants: *Croton* _____ *Telegraph weed* _____ *Eriogonum fasciculatum* _____
Eriogonum thurberi _____ other *Eriogonum* _____ *Oenothera* _____
Camissonia _____ *Eriastrum* _____
Others: _____

Vertebrates

4 juvenile Coast horned lizards, 5 (possibly 7)
Burrowing Owl

Date 8/4/04 Time 1040 to 1310 M.V. Job SBWM
Miles 98786 1040 - 1055 1440
Biologists M.V. 1440

Weather: Temp 76-87°F Wind 3-7 mph Cloud cover / Rain /

Comments:

This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There is no handwriting or other markings on the paper.

Biological elements:

<i>Rhaphiomidas terminatus</i> ?	time	sex	numbers
----------------------------------	------	-----	---------

Other arthropods (general) Bombyliids ☒ Asilids ☒
Mydids ☒ Apiocerids ☒ Sphecids ☒
Chrysidids ☒ Mutilids ☒ Scoliids ☒
Mymerleontids ☒ Other insects of note Larga black
symphid

Plants: *Croton* _____ *Telegraph weed* _____ *Eriogonum fasciculatum* _____
Eriogonum thurberi _____ other *Eriogonum* _____ *Oenothera* _____
Camissonia _____ *Eriastrum* _____
 Others: _____

Vertebrates

rates
Adult and Juvenile Pacific Horn Lizard

Date 8/6/04 Time 1000 to 1400

Job 5 BLM

Miles

Biologists M Van Dam / R. Rogers.

Weather: Temp 72-96 Wind 2-5 Cloud cover 0-0 Rain 0-0

Comments:

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Biological elements:

Rhaphiomidas terminatus? time sex numbers

Other arthropods (general) Bombyliids ☒ Asilids ☒
Mydids ☒ Apiocerids ☒ Sphecids ☒
Chrysidids ☐ Mutilids ☒ Scoliids ☐
Mymerleontids ☒ Other insects of note Rhipiphorid (Macro
siagon flavipennis

Plants: *Croton* _____ *Telegraph weed* _____ *Eriogonum fasciculatum* _____
Eriogonum thurberi _____ other *Eriogonum* _____ *Oenothera* _____
Camissonia _____ *Eriastrum* _____
 Others: _____

Vertebrates

Nackkrabbst

Date Aug. 9, 2004 Time 10:00 to 2:00
Miles 100
Biologists Matthew Van Den

Job SBWM

Weather: Temp 86^s-102°F Wind 2-9 mph Cloud cover 0 Rain 0

Comments:

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Biological elements:

Rhaphiomidas terminatus? time sex numbers .

Other arthropods (general) Bombyliids ☒ Asilids ☒
Mydids ☒ Apiocerids ☒ Sphecids ☒
Chrysidids ☒ Mutillids ☒ Scoliids ☒
Mymerleontids ☒ Other insects of note

Mymarleontids ☒ Other insects of note ☐
 Large Bombyliids and Scoliid seen.
 for first time this year

Plants: *Croton* _____ *Telegraph weed* _____ *Eriogonum fasciculatum* _____
Eriogonum thurberi _____ other *Eriogonum* _____ *Oenothera* _____
Camissonia _____ *Eriastrum* _____
 Others: _____

Vertebrates

rates

Uta,

Date Aug 10, 2004 Time 10:00 to 4:00

Job SBWM

Miles

Biologists Matthew Landrum

Weather: Temp 87-104°F Wind 1-8 mph Cloud cover 0 Rain 0

Comments:

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Biological elements:

<i>Rhaphiomidas terminatus</i> ?	time	sex	numbers
----------------------------------	------	-----	---------

Other arthropods (general) Bombyliids Asilids
Mydids Apiocerids Sphecids
Chrysidids Mutillids Scoliids
Mymerleontids Other insects of note

Plants: *Croton* _____ Telegraph weed _____ *Eriogonum fasciculatum* _____
Eriogonum thurberi _____ other *Eriogonum* _____ *Oenothera* _____
Camissonia _____ *Eriastrum* _____
 Others: _____

Vertebrates

rates
1 juvenile pacific horn lizard

Date Aug 13, 2004 Time 10:00 to 14:00

Job SBWM

Miles

Miles 0
Biologists Matthew Lind Rick Rogers

Weather: Temp 76°-94° Wind 2-8 mph. Cloud cover partly Rain 0

Comments:

Biological elements:

Rhaphiomidas terminatus? _____ time _____ sex _____ numbers _____

Other arthropods (general) Bombyliids ✓ Asilids

Mydids ✓ Apiocerids ✓ Sphecids ✓

Chrysids Mutilids ✓ Scoliids

Mymerleontids	Other insects of note

Plants: *Croton* Telegraph weed *Eriogonum fasciculatum*

Eriogonum thurberi other *Eriogonum* *Oenothera* .

Camissonia *Eriastrum*

Others:

Vertebrates

Date 8/13/04 Time 11⁰⁰ to 12⁰⁰

Job SRWM

Miles _____

Biologists KHO (M. Vukobratovic, R.R. present)

Weather: Temp 75-76 Wind - Cloud cover 25-2 Rain -
haze

Comments:

Dip 2, 13, 15, 7, 10 H/x 1, 2, 22, 13, 9
H/x 43, 52, 138 H/at 18 Col. 6
Wds 7 Lep 2, 3, 5, 6

Biological elements:

Rhaphiomidas terminatus? _____ time _____ sex _____ numbers _____

Other arthropods (general) Bombyliids ☒ Asilids ☒
Mydids _____ Apocerids ☒ Sphecids ☒
Chrysidids _____ Mutilids _____ Scoliids _____
Mymaroleontids _____ Other insects of note _____

Plants: *Croton* _____ *Telegraph weed* _____ *Eriogonum fasciculatum* _____
Eriogonum thurberi _____ other *Eriogonum* _____ *Oenothera* _____
Camissonia _____ *Eriastrum* _____
Others: _____

Vertebrates _____

Date Aug 16, 2004 Time 10:00 to 14:00

Job SBWM

Miles

Biologists Markus J. S.

Weather: Temp 77° - 92 Wind 2 - 7 Cloud cover 0 Rain 0

Comments:

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Biological elements:

Rhaphiomidas terminatus? time sex numbers

Other arthropods (general)
 Mydids
 Chrysidids
 Mymerleontids
 Bombyliids
 Asilids
 Sphecids
 Mutilids
 Scoliids
 Other insects of note

Plants: *Croton* _____ Telegraph weed _____ *Eriogonum fasciculatum* _____
Eriogonum thurberi _____ other *Eriogonum* _____ *Oenothera* _____
Camissonia _____ *Eriastrum* _____
 Others: _____

Vertebrates

rates USA, Ground, Squid

Date 8/17/04 Time 1000 to 1045
Miles 99474 1050
Biologists KHD

Job SBWA

Weather: Temp _____ Wind 2 Cloud cover - Rain -

Comments:

Dip 3, 5, 7, 9, 18

Hym 1, 5, 43

Leys 2, 4, 5 Ads 7

Biological elements:

Rhaphiomidas terminatus ? _____ time _____ sex _____ numbers _____

Other arthropods (general) Bombyliids ☒ Asilids ☒
Mydids _____ Apiocerids ☒ Sphecids ☒
Chrysidids _____ Mutilids _____ Scoliids _____
Mymerleontids ☒ Other insects of note _____

Plants: *Croton* _____ *Telegraph weed* _____ *Eriogonum fasciculatum* _____
Eriogonum thurberi _____ other *Eriogonum* _____ *Oenothera* _____
Camissonia _____ *Eriastrum* _____
Others: _____

Vertebrates

Uta, Horned lizards = 3

Date Aug 18, 2004 Time 10:00 to 13:10

Job SBWM

Miles

Biologists Matthew Van Dam

Weather: Temp 78° 90 Wind 2-10 Cloud cover 0 Rain 0

Comments:

Biological elements:

Rhaphiomidas terminatus ? time _____ sex _____ numbers _____

Other arthropods (general) Bombyliids ☒ Asilids ☒
Mydids ☒ Apocerids ☒ Sphecids ☒
Chrysidids ☒ Mutilids ☒ Scoliids _____
Mymariontids ☒ Other insects of note _____

Plants: *Croton* _____ *Telegraph weed* _____ *Eriogonum fasciculatum* _____
Eriogonum thurberi _____ other *Eriogonum* _____ *Oenothera* _____
Camissonia _____ *Eriastrum* _____
Others: _____

Vertebrates

Date Aug 20, 2004 Time 10:00 to 14:00

Job SBWM

Miles 1

Biologists Matthew Van Dam Rick Rogers

Weather: Temp 72-89°F Wind 2-6 mph Cloud cover 0% Rain 0

Comments:

new Bombyliid: Rhynchanthrax caprea (3)

silver-facial sphecid ~~Empo~~ Clypeodon californicus

Biological elements:

Rhaphiomidas terminatus ? time sex numbers

Other arthropods (general) Bombyliids ✓ Asilids ✓
Mydids ✓ Apiocerids ✓ Sphecids ✓
Chrysidids ✓ Mutilids ✓ Scoliids ✓
Mymerleontids ✓ Other insects of note

Plants: Croton Telegraph weed Eriogonum fasciculatum
Eriogonum thurberi other Eriogonum Oenothera
Camissonia Eriastrum
Others:

Vertebrates

4 pacific coast horn lizards

Date Aug 23 ²⁰⁰⁴ Time 10:00 to 14:00

Job SBWM

Miles 0

Miles 0
Biologists Matthew Van Don

Weather: Temp 67-81 Wind 2-5 Cloud cover partly⁰ Rain 0

Comments:

Biological elements:

Rhaphiomidas terminatus? time sex numbers

Other arthropods (general) Bombyliids V Asilids V
Mydids V Apiocerids V Sphecids V
Chrysidids V Mutilids V Scoliids
Mymmerleontids V Other insects of note

Plants: *Croton* _____ *Telegraph weed* _____ *Eriogonum fasciculatum* _____
Eriogonum thurberi _____ other *Eriogonum* _____ *Oenothera* _____
Camissonia _____ *Eriastrum* _____
 Others: _____

Vertebrates

Date Aug 27, 2004 Time 10:20 to 14:00
Miles

Job SBWM

Biologists Matthew Vard

Weather: Temp 68-80 Wind 1-4 Cloud cover hazy Rain 0

Comments:

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins or other markings visible.

Biological elements:

Rhaphiomidas terminatus? time sex numbers

Other arthropods (general) Bombyliids ☒ Asilids ☒
Mydids ☒ Apiocerids ☒ Sphecids _____
Chrysidids _____ Mutillids ☒ Scoliids _____
Mymmerleontids ☒ Other insects of note _____

Plants: *Croton* _____ Telegraph weed _____ *Eriogonum fasciculatum* _____
Eriogonum thurberi _____ other *Eriogonum* _____ *Oenothera* _____
Camissonia _____ *Eriastrum* _____
 Others: _____

Vertebrates

Black tail jack rabbit, 3 pacific coast horned larks
1 burrowing owl

Date 8/24/04 Time 1209 to 1315

Job SRWM

Miles _____

Biologists KHU

Weather: Temp 75-77 Wind 0-2 Cloud cover - Rain -

Comments:

Dip 3, 18,

Legs 5

Col 6

Biological elements:

Rhaphiomidas terminatus ? _____ time _____ sex _____ numbers _____

Other arthropods (general) Bombyliids _____ Asilids _____

Mydids _____ Apiocerids _____ Sphecids _____

Chrysidids _____ Mutilids _____ Scoliids _____

Mymarleontids _____ Other insects of note _____

Plants: *Croton* _____ *Telegraph weed* _____ *Eriogonum fasciculatum* _____

Eriogonum thurberi _____ other *Eriogonum* _____ *Oenothera* _____

Camissonia _____ *Eriastrum* _____

Others: _____

Vertebrates

Date Aug 27, 2004 Time 10:00 to 14:00

Job SBWM

Miles

Biologists Matthew Van Don and Rick Rogers

Weather: Temp 71°-89°F Wind 2-5 mph Cloud cover hazy Rain 0

Comments:

[illegible]

Biological elements:

<i>Rhaphiomidas terminatus</i> ?	time	sex	numbers
----------------------------------	------	-----	---------

Other arthropods (general) Bombyliids Asilids
Mydids Apiocerids Sphecids
Chrysidids Mutillids Scoliids
Mymerleontids Other insects of note

Plants: *Croton* _____ Telegraph weed _____ *Eriogonum fasciculatum* _____
Eriogonum thurberi _____ other *Eriogonum* _____ *Oenothera* _____
Camissonia _____ *Eriastrum* _____
 Others: _____

Vertebrates

Date 8/27/64 Time 1045 to 1122 Job SBWH
Miles _____
Biologists Kato (M.V. R.R. vacant)

Weather: Temp 76 - Wind 0-2 Cloud cover - Rain -

Comments:

Dip 4, 6, 5, Hy-1

Biological elements:

Rhaphiomidas terminatus ? _____ time _____ sex _____ numbers _____

Other arthropods (general) Bombyliids _____ Asilids _____
Mydids _____ Apiocerids _____ Sphecids _____
Chrysidids _____ Mutilids _____ Scoliids _____
Mymaridontids _____ Other insects of note _____

Plants: *Croton* _____ Telegraph weed _____ *Eriogonum fasciculatum* _____
Eriogonum thurberi _____ other *Eriogonum* _____ *Oenothera* _____
Camissonia _____ *Eriastrum* _____
Others: _____

Vertebrates

Date Aug 30, 2004

Time 10:10 to 14:00

Job

SBWM

Miles

Biologists

Matt & V. Don

Weather:

Temp 72-92°F

Wind

2-6 mph

Cloud cover

Rain

Comments:

Biological elements:

Rhaphiomidas terminatus? _____ time _____ sex _____ numbers _____

Other arthropods (general)

Bombyliids

✓

Asilids

✓

Mydids

Apiocerids

✓

Sphecids

✓

Chrysidids

Mutillids

✓

Scoliids

Myrmecotids

✓

Other insects of note

Plants: *Croton*

Telegraph weed

Eriogonum fasciculatum

Eriogonum thurberi

other *Eriogonum*

Oenothera

Camissonia

Eriastrum

Others:

Vertebrates

Date Aug 31, 2004 Time 10:00 to 14:00

Job SBWM

Miles

Biologists Matthew VanTassan

Weather: Temp 85-102°F Wind 2-5 Cloud cover — Rain —

Comments:

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Biological elements:

<i>Rhaphiomidas terminatus</i> ?	time	sex	numbers
----------------------------------	------	-----	---------

Other arthropods (general) Bombyliids ☒ Asilids ☒
 Mydids ☐ Apiocerids ☒ Sphecids ☒
 Chrysidids ☐ Mutilids ☐ Scoliids ☐
 Mymerleontids ☒ Other insects of note ☐

Plants: *Croton* _____ *Telegraph weed* _____ *Eriogonum fasciculatum* _____
Eriogonum thurberi _____ other *Eriogonum* _____ *Oenothera* _____
Camissonia _____ *Eriastrum* _____
 Others: _____

Vertebrates

Date ~~Aug~~ Sep-3, 2044 Time 10:00 to 14:00

Job

SBWM

Miles

Biologists Matthew VanDorn

Weather: Temp 74-86 Wind 2-4 Cloud cover haze Rain

Comments:

Biological elements:

Rhaphiomidas terminatus? time sex numbers

Other arthropods (general) Bombyliids ☒ Asilids ☒
Mydids ☐ Apicocerids ☒ Sphecids ☒
Chrysidids ☐ Mutilids ☒ Scoliids ☐
Mymecleontids ☒ Other insects of note

Plants: *Croton* ☐ *Telegraph weed* ☐ *Eriogonum fasciculatum* ☐
Eriogonum thurberi ☐ other *Eriogonum* ☐ *Oenothera* ☐
Camissonia ☐ *Eriastrum* ☐
Others:

Vertebrates

3 Pacific coast horn toad

Date 9/6/64 Time 1118 to 1400 MU-10 Job SRLM
Miles 100531 1118 - 1213 1440
Biologists KHO, M Van Dine (SS)

Weather: Temp 95- Wind 0-2 Cloud cover - Rain -

Comments:

Biological elements:

Rhaphiomidas terminatus? _____ time _____ sex _____ numbers _____

Other arthropods (general) Bombyliids / Asilids _____
Mydids _____ Apocerids _____ Sphecids /
Chrysidids _____ Mutilids / Scoliids _____
Mymerleontids / Other insects of note _____

Plants: *Croton* _____ *Telegraph weed* _____ *Eriogonum fasciculatum* _____
Eriogonum thurberi _____ other *Eriogonum* _____ *Oenothera* _____
Camissonia _____ *Eriastrum* _____
Others: _____

Vertebrates

Coast Horned Lizard, Uta

Date Sep 7, 1964 Time 10:00 to 14:00

Job SBWM

Miles _____

Biologists _____

Weather: Temp 83°-104°F Wind 2-5 mph Cloud cover 0 Rain 0

Comments:

Biological elements:

Rhaphiomidas terminatus? _____ time _____ sex _____ numbers _____

Other arthropods (general) Bombyliids ☒ Asilids ☒
Mydids _____ Apocerids ☒ Sphecids ☒
Chrysidids _____ Mutilids ☒ Scoliids _____
Mymerleontids ☒ Other insects of note _____

Plants: *Croton* _____ *Telegraph weed* _____ *Eriogonum fasciculatum* _____
Eriogonum thurberi _____ other *Eriogonum* _____ *Oenothera* _____
Camissonia _____ *Eriastrum* _____
Others: _____

Vertebrates

1 pacific coast horn toad, 2 black tail jack rabbits
1 red racer

Date 9/8/64 Time 1050 to 1810
Miles 100625
Biologists Kato

Job SBW1

Weather: Temp 90 Wind - Cloud cover - Rain -

Comments:

W. p. Polster a. Polster, f., Ayre,

Biological elements:

Rhaphiomidas terminatus ? _____ time _____ sex _____ numbers _____

Other arthropods (general) Bombyliids _____ Asilids _____
Mydids _____ Apiocerids _____ Sphecids _____
Chrysidids _____ Mutilids _____ Scoliids _____
Mymarleontids _____ Other insects of note _____

Plants: *Croton* _____ *Telegraph weed* _____ *Eriogonum fasciculatum* _____
Eriogonum thurberi _____ other *Eriogonum* _____ *Oenothera* _____
Camissonia _____ *Eriastrum* _____
Others: _____

Vertebrates

Date Sep 9, 2004 Time 10:00 to 14:00

Job SBWM

Miles

Biologists Matthew W. Dunn

Weather: Temp 80-97°F Wind 2-4 Cloud cover partly Rain 0

Comments:

Biological elements:

Rhaphiomidas terminatus ? time _____ sex _____ numbers _____

Other arthropods (general) Bombyliids ☒ Asilids ☒
Mydids _____ Apiocerids ☒ Sphecids ☒
Chrysidids ☒ Mutilids ☒ Scoliids _____
Mymerleontids ☒ Other insects of note _____

Plants: *Croton* _____ *Telegraph weed* _____ *Eriogonum fasciculatum* _____
Eriogonum thurberi _____ other *Eriogonum* _____ *Oenothera* _____
Camissonia _____ *Eriastrum* _____
Others: _____

Vertebrates

1 pacific coast horn toad, 1 red tail hawk

Date Sep 10, 2004 Time 10:00 to 12:00
Miles _____

Job SBWM

Biologists Matthew VanDine Rick Rogers

Weather: Temp 85-93° Wind 2-4 mph Cloud cover 0 Rain 0

Comments:

Biological elements:

Rhaphiomidas terminatus? _____ time _____ sex _____ numbers _____

Other arthropods (general) Bombyliids ☒ Asilids ☒
Mydids _____ Apocerids _____ Sphecids ☒
Chrysidids ☒ Mutilids ☒ Scoliids _____
Mymerleontids ☒ Other insects of note _____

Plants: *Croton* _____ *Telegraph weed* _____ *Eriogonum fasciculatum* _____
Eriogonum thurberi _____ other *Eriogonum* _____ *Oenothera* _____
Camissonia _____ *Eriastrum* _____
Others: _____

Vertebrates

Date Sep 13, 2004 Time 10:00 to 1245 M.U. Job SBWM
Miles 1045 - 1245 Ktu
Biologists Matthew Va

Weather: Temp 71 - 81 Wind 2 Cloud cover hazy Rain ✓

Comments:

Sarcids, Dip 5, 6, etc

Biological elements:

Rhaphiomidas terminatus ? time sex numbers

Other arthropods (general) Bombyliids ✓ Asilids ✓
Mydids ✓ Apiocerids ✓ Sphecids ✓
Chrysidids ✓ Mutilids ✓ Scoliids ✓
Mymarleontids ✓ Other insects of note

Plants: *Croton* ✓ Telegraph weed ✓ *Eriogonum fasciculatum* ✓
Eriogonum thurberi ✓ other *Eriogonum* ✓ *Oenothera* ✓
Camissonia ✓ *Eriastrum* ✓
Others:

Vertebrates

Horred lizards w 4

Date 9/17/64 Time 1024 to 1400

Job SRWH

Miles 1017524 Kto 1024-1134

Biologists Kto H.V. / Brian Harris

Weather: Temp 75° Wind 0-5 Cloud cover 0 Rain -

77° @ 1134

Waz

Comments:

Nip5, Nip7, Amygdala W, 1 pupa
Theraps,

Biological elements:

Rhaphiomidas terminatus ? time _____ sex _____ numbers _____

Other arthropods (general) Bombyliids ☒ Asilids _____

Mydids _____ Apiocerids _____ Sphecids ☒

Chrysidids _____ Mutilids ☒ Scoliids _____

Mymarleontids ☒ Other insects of note _____

Plants: Croton _____ Telegraph weed _____ Eriogonum fasciculatum _____

Eriogonum thurberi _____ other Eriogonum _____ Oenothera _____

Camissonia _____ Eriastrum _____

Others: _____

Vertebrates

4 pacific coast horn toads

Date 9/19/04 Time 1030 to 1408 Job SBLM
Miles 101849
Biologists KHO with 10 pm @ 1400

Weather: Temp 73-77 Wind 5-10 Cloud cover 10% Rain -

Comments:

App 10, 9, 5, 41 14pm 1
Orthops 1, 2

Biological elements:

Rhaphiomidas terminatus ? time sex numbers

Other arthropods (general) Bombyliids ✓ Asilids ✓
Mydids ✓ Apiocerids ✓ Sphecids ✓
Chrysidids ✓ Mutilids ✓ Scoliids ✓
Mymerleontids ✓ Other insects of note ✓

Plants: *Croton* ✓ *Telegraph weed* ✓ *Eriogonum fasciculatum* ✓
Eriogonum thurberi ✓ other *Eriogonum* ✓ *Oenothera* ✓
Camissonia ✓ *Eriastrum* ✓
Others: ✓

Vertebrates

WMA BRT

SOWM

Ole saratoga &
field forms

7/17/2 7/21/5 7/9

7/13

7/12 004

1	DSFLF	<i>Rhaphiomidas terminatus</i>					
2		<i>Nemomydas pantherinus</i>	✓	✓	✓	✓	✓
3	apiocera conv	<i>Apiocera convergens</i>					
4	apiocera conv	<i>Apiocera crysolasia</i>					
5	Black bombyliid	<i>Thyridanthrax atrata</i>	✓	✓	✓	✓	✓
6	gold (large) bombyliid clr wng	<i>Villa molitor</i>	✓	✓	✓	✓	✓
7	brn striped bombyliid clr wng	<i>Villa lateralis</i>	✓	✓	✓	✓	✓
8	tiny ground bombyliid		✓	✓	✓	✓	✓
9	bee mimic asilid	<i>Mallophora faultrix</i>					✓
10	checkered asilid	<i>Efferia albibarbis</i>	✓		✓		
11	common brown asilid	<i>Stenopogon brevisculus</i>	✓				
12	tiny brown asilid	<i>Stenopogon lomae</i>					
13	apis mimic syrphid	<i>Eristalis tenebrosus</i>	✓	✓	✓	✓	✓
14	conopid	<i>Physoccephala texana</i>			✓		
15	dolichopodid	<i>Condyllostylus pilicornis</i>			✓		
16	black tachinid	<i>Archytas apicifer</i>					
17	checkered tachinid	<i>Pelateria ?</i>					
18	sarcophagid	<i>Sarcophaga sp</i>					
19	green bottle fly	<i>Phaenicia sericata</i>					
20	large humped bombyliid	<i>Toxophora pellucida</i>	✓	✓	✓	✓	✓
21	brn asilid w/ w wing base	<i>Stenopogon rufibarbis</i>	✓				
22	cactus fly	<i>Volucella mexicana</i>					
23	musca d	<i>Musca domestica</i>	✓		✓		
24	Tabanid black	<i>Tabanus punctifer</i>					
25	red asilid	<i>Saropogon luteus</i>			✓	✓	
26	common ottitid						
27	green tephritid						
28	med brone syrphid	<i>Eristalis aenea</i>					
29	white therivid	<i>Thereva semitana</i>					
30	small syrphid	<i>Syriffa pipiens</i>				✓	
31	common small syrphid	<i>Allograpta obliqua</i>	✓				
32	tachinid on Hemip	<i>Cylindromyia</i>	✓			✓	
33	Red abd tachinid	<i>Gymnosoma fuliginosum</i>			✓	✓	
34	small bombyliid	<i>Garon</i>					
35	brown bombyliid of ef	<i>Poecilognathus</i>					
36	bombyliid	<i>Thyridanthrax pallida</i>					
37							
38	bombyliid	<i>Exoprosopa butleri</i>					
39	bombyliid						
40	bombyliid	<i>Villa junctura</i>					
41	bombyliid	<i>Nasutiphyscia mellea</i>					
42	tachinid	<i>Eumechronychia</i>					
43	syrphid	<i>Pseudodora clavatus</i>	✓				
44	bombyliid	<i>Heterostylum robustum</i>					
45	crane fly	<i>Nephrotoma</i>					
46		<i>Paragus</i>					
47	Therivid	<i>Ozodicceromyia</i>					
48							
49							
50	med fly	<i>Ceratitis capitata</i>					
51							

Bombyliid

Rhynchanthrax caprea on 8/20 Ann Regan

✓ *Eristalis latifrons*

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52					
53					
54					
55	syrphid	<i>Eupeodes volucris</i>	✓✓✓✓		
56					
57	bombyliid	<i>Neodiplocampta mira</i>		✓	
58	Huge bombyliid	<i>Ligyra gozophylax</i>			
59	dark winged tachinid			✓	
60	med syrphid striped thorax				
61	tan bombyliid near #6	<i>Villa</i>			
62	small black bombyliid				
63	small brown/silver abd bomb	<i>Eucessa rubens</i>			
65	small blk bomb elongate	<i>Paracosmus edwardsii</i>	✓	✓	✓
66	small dark asilid nr 21				
67	brwn bombyliid solid wing	<i>Poecilanthrax arethusa</i>			
68	tan bombyliid blk dots on abd	<i>Villa (Chrysanthrax) adumbrata</i>			
69	bombyliid near #5	<i>Villa mis+C92cella</i>			
70	near 44				
72	Mexican fruit fly				
71	Giant asilid	<i>Promachus aldrichii</i>			
72	bombyliid near wood	<i>Anthrax inornatus</i>			
73	small grey bombyliid	<i>Apheobantus mus</i>			
74	yellow-jacket mimic syrphid	<i>Spilomyia interrupta</i>			
75	soldier fly	<i>Hermetia illucens</i>			
	<i>Copostylum marginatum</i> (cactus flies)			✓	
	<i>Copostylum</i> sp. quadratus (syrphid)			✓	
	<i>Aphigobantus</i> sp (small bombalid white legs)			✓	
1	common bembx	<i>Bembix americana</i>	✓✓✓✓		
2	bright yellow sphecid	<i>Philanthus multimaculatus</i>	✓✓✓✓		
3	large fly killer	<i>Bombix malenopsis</i>			
4	dark bembx	<i>Taschytes elongatus distinctus</i>	✓	✓	✓
5	non amophila	<i>Prionyx thomae</i>	✓✓✓✓		
6	red grasshopper killer	<i>Prionyx foxi</i>		✓	✓
7	cricker killer	<i>Chlorion aerarium</i>		✓	✓
8	mud dauber	<i>Sceliphron caementarium</i>		✓	✓
9	large amophila	<i>Ammophila aberti</i>	✓	✓	✓
10	med amophila	<i>Ammophila azteca</i>		✓	✓
11	small amophila	<i>Ammophila</i>			✓
12	large polistes	<i>Polistes apachus</i>		✓	✓
13	med polistes	<i>Polistes fuscatus dark</i>	✓✓	✓	✓
14	small polistes	<i>Euodynerus annulatus</i>	✓	✓	✓
15	small red mutlid	<i>Dasymutilla californica</i>	✓✓✓✓		
16	pepsis	<i>Pepsis chrysothemis</i>	✓✓		
17	large dark pompillid				
18	small dark sphecid nr pompillid		✓		
19	med pompillid				
20	common chrysidid, large	<i>Parnopes edwardsii</i>			
21	med chrysidid w/green abd.	<i>Chrysis</i>			
22	apis	<i>Apis mellifera</i>	✓✓✓✓		
23	tiny red/blk snad sphecid	<i>Tachysphex</i>			
24	small red pompillid				
25	blk/red pompillid	<i>Cryptocheilus</i>			

Giris nr 25

✓ *Sphecid*

Clypeadon californicus 8/20 per Rogan.

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26	large blk/orange grasshop kill	<i>Sphex ichneumonoides</i>				
27	greenbee yellow abd	<i>Agapostemon</i>	✓	✓	✓	
28	checkered bee	<i>Ericroclis lata</i>				
29	SPACE FOR NEW SP					
30	yellow jacket like	<i>Bicyrtes ventralis</i>				
31	darker yellow jacket like	<i>Bicyrtes capnoptera</i>				
32	a yellow sphecoid	<i>Cerceris femorurubrum</i>		✓		
33		<i>Clypeadon laticinctus</i>				
34						
35	small compact yellow	<i>Anthidium placitum</i>				
36	" small	<i>Dianthidium parvum</i>				
37	* very dark	<i>Anthidiellum notatum</i>				
38	vespid w/boulbus abd	<i>Eumenes bollii</i>				✓
39	nr dorsalis narrow body dk wing	<i>Polistes exclamens</i>				
40	tiny vispid w/black tip	<i>Parancistrocetus toltecus</i>				
41	tiny vespid w/yellow	<i>Leptochilus boharti</i>				
42	scoliid	<i>Campsomeris tolteca</i>				
43	Pogonomymex c	<i>Pogonomymex californicus</i>	✓	✓	✓	✓
44	black harvester ant	<i>Mesopergandi</i>				
45	argentine	<i>Indomymex humilis</i>				
46	gray ant on riparian	<i>Liometopum</i>				
47	small re/blk ant on sunfir					
48	near ammophilina (blk)	<i>Ammophila placida</i>				
49		<i>Halictus ligatus</i>				
50	large sphex	<i>Sphex ichneumonoides</i>				
51	black and white mutilid	<i>Clydenetra</i>				
52	large white mutilid	<i>Dasymutilla sackeni</i>		✓		
53	blue mud wasp	<i>Chalybion californicum</i>				
54	bee long antenna on	<i>Melissodes (male)</i>				
55	bee blk/white	<i>Megachile</i>				
56	noptn ammophila red abd	<i>Prionyx</i>				
57		<i>Cerceris sextoides</i>				
58	Tachysphex ?	<i>Tachysphex</i>			✓	
59	bee	<i>Melissodes (male)</i>				
60	bee	<i>Megachile</i>				
61	bee	<i>Halictus ligatus</i>				
62	bee	<i>Halictus tripartitus</i>				
63	Sphecoid					
64	bee	<i>Megachile</i>				
65	bee	<i>Anthophora urbana</i>			✓	
66		<i>Philanthus ventralis</i>				
67		<i>Ammophila</i>				
68		<i>cerceris</i>	✓			
69						
70	pompillid	<i>Aporinellus</i>	✓			
71	pomillid red wings					
72	brown sphecoid	<i>Astrata</i>				
73		<i>Cerceris femorurubrum</i>				
74		<i>Tachysphex</i>	✓			
75		<i>Tachysphex</i>				
76	Gortine sphecoid, small rust w	<i>Hoplisoides diversus</i>				
77	red pompillid	<i>Aganiella</i>			✓	

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78	Goyrtline specid					
79		<i>Nomada</i>				
80	bee	<i>Megachile</i>				
81	bee	<i>Colletes (male)</i>		✓		
82	bee	<i>Colletes (female)</i>				
83		<i>Isodontia elegans</i>				
84	bee	<i>Lasioglossum (Dialictus)</i>				
85	small chrysididae green	<i>Argochrysis sp</i>				
86	bee	<i>Halictus ligatus</i>				
87						
88	cicadellid killer	<i>Hapalomellinus</i>				
89						
90						
91						
92		<i>Cerceris</i>				
93		<i>Cerceris</i>				
94		<i>Centris (female)</i>				
95		<i>Nomada</i>				
96		<i>Colletes (male)</i>	✓			
97		<i>Xeromelecta californica</i>				
98		<i>Tripeolus (male)</i> " <i>Epiolus</i> <i>argyriatus</i> "		✓		
99						
100		<i>Halictus ligatus</i>				
101		<i>Melissodes (male)</i>				
102		<i>Xylocopa veripuncta</i>				
103		<i>Anthidium (male)</i>				
104		<i>Lasioglossum</i>				
105						
106						
107	Tiphid					
108		<i>Cerceris</i>				
109			✓			
110						
111						
112		<i>Cerceris</i>				
113		<i>Cerceris</i>				
114						
115		<i>Megachile</i>				
116						
117		<i>Anthophora</i>				
118		<i>Halictus farinosus (male)</i>				
119	Anomalinae					
120		<i>Diadasia (male)</i>				
121		<i>Bicyrtes</i>				
122	red pompillid (med size)					
123	small ylw/bkl compact	<i>Dianthidium (male)</i>				
124	small black vespid					
125	Bumble bee	<i>Bombus crotchii (male)</i>				
125a	Anthophorid	<i>Svastra (male)</i>				
126	Blk. Sphecid w/red spot abd	<i>Stizoides renieinetum</i>				
127	hairy yellow scolid	<i>Trilis alcone</i>				
128	Vespid (weird)	<i>Maricopodynerus</i>				

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129	Bumble bee	<i>Bombus crotchii</i> (male)					
130	bee black and yellow sm.	<i>Nomada</i>					
131	red ichneumonid blk wngs						
132	short, near #4	<i>Tachytes</i>					
133	near #14 vespid						
134	Carpenter bee	<i>Zylocopa varipuncta</i>					
135	yellow jacket	<i>Vespa</i>					
136	small chrysidid w/purple abd.	<i>Argochrysis mesillae</i>					
137	green bee pale abd	<i>Agapostemon</i>					
138	large red multilid	<i>Dasymutilla coccineohirta</i>	✓	✓	✓	✓	✓
139	nr apachus no pronotal marks	<i>Polistes dorsalis</i>					
140	blk thorax, clear def cross abd	<i>Eumenes crucifera</i>					
141	large yellow Bembix	<i>Bembis melanaspis</i>					
142	large, elongate rust Cerceris	<i>Cerceris bicomuta</i>					
143	nr 68, w/intersegmental blk dash	<i>Eucerceris insignis</i>					
144	nr 92, larger, more blk on abd	<i>Eucerceris aerenaria</i>					
145	yellow microbembix	<i>Microbembix californica</i>					
146	thin blk-yellow wasp, fat female	<i>Myzinum maculatum</i>					
147		<i>Clypeodon californicus</i>					
148	Black mutilid	<i>Pseudomethoca</i>					
149							
150	P. thysa	(giant) Pepsis					
	Pepsis mildei	(orange antenne)					
	small orange mutilid	<i>P. californicus</i>					
	Arctostichus obscurator (dark)					✓	
	Cerceris californicus					✓	
1	Antlion		✓		✓		
2	greenlacewing	<i>Chrysopa</i>					
	Gasteraphid						
1	small lygaeid	<i>Nysius</i>					
2	Rhopalid	<i>Arhyssus</i>					
3	Lygus	<i>Lygus</i>					
4	nabid	<i>Nabis</i>					
5	geocoris	<i>Geocoris</i>	✓		✓		
6	narrow reduviid	<i>Zelus</i>					
7	broad reduviid	<i>Sinea diadema</i>					
8		<i>Rhynocoris ventralis</i>	✓		✓		
9	common milkweed	<i>Lygaeus kalmii</i>					
10	common Pentatomid	<i>Chlorochroa uhleri</i>			✓	✓	
11	Harlequin	<i>Murgantilla histrionica</i>					
12	large leaf footed bud	<i>Leptoglossus clypealis</i>					
13	reduviid	<i>Zelus renardii</i>					
14	small pentatomid	<i>Thyanta</i>					
15	Alytids	<i>Alydus</i>					
16	Phymatid	<i>Phymata</i>					
17		<i>Alydus</i>					
18	Scutellerid	<i>Euptychodera corrugata</i>					
19	Rhopalid	<i>Harmostes</i>					
20	large purple pentatomid	<i>Chlorochroa ligata</i>					
21		<i>Sinea complexa</i>					
22		<i>Holcostethus</i>					

Nomadulid? Brach 22 7/2/04

Hym. Mant. Mimeria sp.
 Oxybelus pitanta (near #74) small
 O. unigularis med

23		<i>Oncopeltus fasciatus</i>				
24		<i>Corimelaena lateralis</i>				
25	negro bug					
26	SPACE FOR NEW SPECIES					
27	largid					
28	Pentatomid on Horhound	<i>Trichopepla aurorae</i>				
29	small red lygaeid on senicio					
30	large scutellarid					
31	saldidae					
32	tingid on sycamore					
33	common pentatomid not narrow	<i>Chlorochroa sayi</i>				
1		<i>Homalodisca lacerta</i>				
2						
3						
4						
5						
6	Verigated leaf hopper					
1	12 spot	<i>diabrotica unedecimpunctata</i>				
2	weird cucumber	<i>Diabrotica balteata</i>				
3	stripped jensen weed	<i>Lema trilineata</i>				
4	rhizophorid	<i>Macrosiagon flavipenne</i>				
5	black mustard chrysomelid	<i>Coscinoptera aenelpennis</i>				
6	fig beetle	<i>Cotinus texana</i>				
7	ragweed weevil					
8	melyrid	<i>Collops</i>				
9	H. convergens	<i>Hippodamia convergens</i>				
10	large coccinellid					
11	large elodes	<i>Elodes gracilis</i>				
12						
13						
14						
15	black coccinellid	<i>Adalia bipunctata</i>				
16	large coccinellid	<i>Coccinella californica</i>				
17	buprestid	<i>Acmaeodera</i>				
18	scarab	<i>Ligyris gibbosus</i>				
19	scarab	<i>Ligyris gibbosus</i>				
20	curculionid					
21	teneb					
22	eucalyptus borer					
23	small buprestid	<i>Agrilus angelicus</i>				
24		<i>Diabrotica vittata</i>				
25		<i>Coccinella septempunctata</i>				
26						
27	curculionid on Jimsen					
28	NEW SPECIES					
29	eucalypts chrysomellid					
30	orange meloid on sunflr	<i>Nemognatha lurida apicalis</i>				
31	medium green buprestid					
32						

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33									
34									
35	Coronid	Parandva							
1	green damer	Anax junius	✓	✓	✓				
2	blue damer	Aeshna multicolor							
3	red libellulid (most damer)	Libellula saturata							
4	common small libellulid	Sympetrum corruptum			✓	✓			
5	brown blotched lib	Tramea onusta							✓
6	black blotched lib	Tramea lacerata			✓				
7	yellow cruiser	Pantala flavescens	✓	✓	✓	✓			✓
8	cruiser w/ black spot	Pantala hymenaea							
9	small green lib y ♂ = blue	Erythemis collocata							
10	tiny orange lib	Perithemis intensa							
11	blue damsel	Argia			✓				
12	green damsel								
13	very small dark lib	Pachydiplax longipennis							
14	small dark red lib.	Sympetrum illotum							
	base dusky red	L. croceipennis							
1		Pieris rapae							
2		Pontia protodice	✓	✓	✓	✓	✓	✓	
3		Plebejus acmon	✓	✓	✓	✓	✓	✓	
4		Strymon melinus	✓	✓	✓	✓	✓	✓	
5		Brachidium exilis	✓	✓	✓	✓	✓	✓	
6		Hylephila phyleus							
7		Colias eurytheme			✓				
8		Vanessa cardui							
9	Pyrallid		✓	✓	✓				
10		Caenurgina togataria							
11		Junonia coenia							
12		Hemiargus isola							
13		Hemiargus ceranus							
14		Vanessa virginiensis							
15		Habrodeis grunus							
16		Danaus plexippus			✓				
17		Danaus gillipus							
18		Papilio rutulus							
19		Limenitis lorquini							
20		Pyrgus albescens						✓	
21		Atalopedes campestris							
22		Lerodia eufala							
23		Nymphalis antiopa							
24		Leptotes marina							
25		Ochlodes sylvanoides							
26		Hyles lineata						✓	
27		Catacola irene							
28		Papilio cressphontes							
29		Schinia							
30		Spodoptera							
31		Manduca sexta							
32		Eumorphia acmon							

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33		<i>Papilio biardi</i>					
34		<i>Polites sabuleti</i>					
35		<i>Eurema nicippe</i>					
36		<i>Vanessa annabella</i>					
✓ 37		<i>Erynnis funeralis</i>	✓				
38		<i>Agraulis vanillae</i>					
39		<i>Melipotis jacunda</i>					
✓ 40		<i>Acontia sedata</i>					
41		<i>Schinia citronella</i>					
42		<i>Schinia scarletina</i>					
43		<i>Everys amyntula</i>					
✓ 44		<i>Heliopterus ericitorum</i>					
45		<i>Apodemia momo</i>					
46		<i>Erynnis tristis</i>					
✓ <i>Sarcid</i> 9/13/14 <i>Paranthrene robiniae</i>							
✓ 1	<i>T. pallidipennis</i>	<i>Trimerotropis pallidipennis</i>	✓	✓	✓	✓	✓
✓ 2	<i>T. orang leg</i>	<i>Trimerotropis californica</i>	✓	✓	✓	✓	✓
✓ 3	<i>T. stragne</i>	<i>Derotmema saussureanum</i>	✓	✓	✓	✓	✓
✓ 4	<i>Diamond leg</i>	<i>Psoloessa thamnogaea</i>					
✓ 5	<i>Melanoplus blue leg</i>	<i>Melanoplus</i>					
✓ 6	<i>Melanoplus red leg</i>	<i>Melanoplus</i>					
✓ 7	<i>red wing</i>	<i>Dissosteira pictipennis</i>					
✓ 8	<i>green schistocerca</i>	<i>Schistocerca</i>					
✓ 9	<i>common schistocerca</i>	<i>Schistocerca nitens</i>					
10	<i>green tree cricket</i>	<i>Oecanthus</i>					
11	<i>T. blue with blue leg</i>	<i>Trimerotropis pseudofasciata</i>					
12	<i>angle wing katydid</i>	<i>Microcentrum rhombifolium</i>					
13	<i>green on Heterotheca</i>						
14	<i>T. pink leg</i>	<i>Trimerotropis</i>					
15	<i>green melanoplus</i>	<i>Melanoplus yarrowii</i>					
16	<i>T. blue leg w/ yellow wng</i>	<i>Trimerotropis fontana</i>					
17	<i>Pygme mole cricket</i>	<i>Trydactylus</i>					
18	<i>Tetrigidae</i>						
18	<i>Jerusalem cricket</i>	<i>Stenopelmatus new species</i>					
20	<i>narrow katydid</i>	<i>Scudderis mexicana</i>					
21	<i>field cricket</i>	<i>Gryllus</i>					
22	<i>sand cricket</i>						
1	<i>mantid</i>	<i>Iris oratoria</i>					
2	<i>small adult brown</i>	<i>Stagmomantis californica</i>					
✓ <i>small mantid</i> <i>Litanautria minor</i>							
1	<i>sand roach</i>						

***REPORT OF YEAR 2006 FOCUSED SURVEY FOR
DELHI SANDS FLOWER-LOVING FLY
AT SARES-REGIS SITE
SAN BERNARDINO COUNTY, CALIFORNIA***

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November 2006

INTRODUCTION

This report presents the findings of the third consecutive year of a focused survey for the Delhi Sands flower-loving fly (*Rhaphiomidas terminatus abdominalis*) conducted by Larry Munsey International (LMI) on a site (ASurvey Site@) in Ontario, San Bernardino County, California (Figure 1). The Survey Site falls within Section 36, Township 1 south, range 7 west of the U. S. Geological Survey (USGS) Guasti 7.5-minute quadrangle (Figure 2). It is an approximately 39-ha (98-ac) parcel of land bounded on the N by Francis St. (S of Jurupa Ave.), on the S by the old Milliken Landfill, on the W by Haven Ave., and on the E by Milliken Ave. (Figure 3).

The information provided in this report is for use by resource agencies in assessing the potential impact of any contemplated action at the Survey Site upon the Delhi Sands flower-loving fly, and for use by the property owner and other interested parties in anticipating the possible consequences of environmental compliance and permitting requirements upon land use planning.

BACKGROUND

The Delhi Sands flower-loving fly (DSF) is currently listed by the U.S. Fish and Wildlife Service (USFWS) as endangered under the federal Endangered Species Act (ESA). Pursuant to provisions of the ESA, Atake@ of a federally listed species, such as the DSF, is prohibited by law. The term Atake@ is defined as any action that would harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect an endangered species, including by alteration of habitat. The USFWS monitors actions that might affect endangered species through its role as a reviewing agency in the land entitlement process. Typically in California the agency's responsibility to minimize adverse impacts upon endangered species is discharged through involvement in the California Environmental Quality Act (CEQA) review and approval process and/or through the courts. In order to demonstrate whether or not and/or to what degree the DSF, as an endangered species, may be a concern related to land use decisions, the USFWS requires that presence/absence surveys for the species, such as that reported herein, be undertaken.

The DSF is a member of a genus of flies, *Rhaphiomidas*, that, along with some members of the Dipteran family Asilidae (robber flies), contains the largest flies known in North America. Though formerly considered a member of the flower-loving fly family Apioceridae (Cole 1969; Peterson 1981; Cazier 1941, 1985), recent taxonomic studies indicate the genus *Rhaphiomidas*, and thus the DSF, actually belongs in the midas fly family Mydidae (Ovchinnikova 1989; Woodley 1989; Sinclair, *et al.* 1994; Yeates 1994).

There are 20 described species of *Rhaphiomidas* flies as of this writing (Cazier 1985; Rogers 1999), including two new species described recently by Rogers (1993a); descriptions of three additional species are currently in preparation (Rogers 1999). Their known distribution is restricted to desert and semidesert regions of California, southern Nevada, Arizona, New Mexico, western Texas, Baja California, and northwestern Mexico (Rogers and Mattoni 1993). Within this region, they are confined to habitats with fine, sandy substrate, such as sand dunes and dry sandy/rocky washes. All species of this genus exhibit relatively short annual flight periods within a particular locality, normally on the order of two to five weeks (Toft and Kimsey 1982; Wharton 1982; Rogers and Mattoni 1993).

The DSF itself is large, approximately 2.5 cm (1 in) in length, orange-brown in color, and has dark brown oval markings on the upper surface of the abdomen. It has a long proboscis for extracting nectar from flowers, and can be easily distinguished by this obvious feature from the few other species of like-appearing flies occurring within its range. It is generally low-flying, and males of the species are capable of extremely fast flight.

The geographic distribution of the DSF is restricted to areas having a specific sandy substrate type classified as Delhi Series soils, commonly known as "Delhi Sands". This white to light brown fine unconsolidated sand and sandy loam soil formation covers approximately 40 square miles in several irregular patches extending from the City of Colton to Ontario and Chino in northwestern Riverside and southwestern San Bernardino counties (USDA 1971, 1980). This region of Delhi series soils, also known

as the Colton Dunes, is the largest inland cismontane sand dune formation in southern California. This dune formation has been defined as the Desert Sand-verbena Series in Sawyer (1994).

Though museum records indicate its historic range likely included the entire expanse of Delhi Sands soils (Ballmer 1989), the current literature indicates the known distribution of the DSF, as of spring 1997, is restricted to 12 disjunct locations totaling approximately 190 ha (450 ac) situated within a 13-km (8-mi) radius reaching from Colton to Mira Loma, California (Ballmer 1992; USFWS 1992, 1993, 1996a, 1997). This represents a small fraction of its former range (USFWS 1996a, 1997). DSF sightings reported from recent surveys suggest the current range of the DSF may actually extend as far west as Ontario (Woulfe 2000; Osborne 2000; Wilcox 2003).

Much of the Colton Dunes region has been used for agriculture, chiefly grapes and citrus, since the 1800's. More recently, much of the remaining area has been converted to dairies, housing tracts, and commercial/industrial enterprises. Additional habitat has been lost, degraded, and fragmented by sand mining, illegal dumping, off-road vehicle usage, trampling, vegetation clearing for fire prevention, and competitive exclusion of native plants by invasion of exotic species.

The DSF undergoes complete metamorphosis (egg, larva, pupa, and adult). The complete life span of the species is unknown. Under favorable environmental conditions, the life cycle is likely annual, but it is possible that the larval/pupal stages may last two years or longer, depending on availability of food, temperature, rainfall, and other environmental factors. Except for the adult stage, the remainder of the life cycle is spent underground. It is unknown where the larval form of the DSF lives below ground and what its microhabitat requirements may be. It is not clear whether the early stages of *Rhaphiomidas* in general are herbivores, detritivores, or carnivores. The larvae of the closely related genus *Apiocera* have been successfully raised on earthworms in the laboratory (Cazier 1982).

Adult DSF emerge and become active in the late summer. Collection records for the DSF (Ballmer 1989) and current behavioral studies (Kingsley 1996) document a single annual flight period occurring between early August and early to mid-September. The exact adult life span is not known (several days to several weeks has been postulated), but it is documented that adults do not survive beyond the end of the annual flight period (Kiyani 1995).

Adult DSF are active during the warmest portions of the day during periods of direct sunlight, generally when daytime temperatures exceed 27 degrees Celsius [EC](80 degrees Fahrenheit [EF]) (Ballmer 1989). Peak activity period is between 1000 and 1300 hours PDT; males are rarely, if ever, observed outside 0900-1500 hours, while females have been observed perched on bushes as early as 0800 hours and after nightfall (Kingsley 1996). Flight has not been observed during cloudy, overcast, or rainy conditions, and only rarely during windy or breezy conditions, such as commonly arise in the afternoons within the DSF's range. During these conditions some observations have been made of perching within vegetation. Oviposition has only been observed in mid- to late afternoon, when temperatures begin to decrease (USFWS 1997).

While aloft, DSF may exhibit at least five distinctive types of behavior, each associated with a markedly different flight pattern (Kiyani 1995; Kingsley 1996). "Cruising" or Apatrolling@, employed by males only, constitutes slow, near-ground, somewhat erratic flight, sustained for relatively long duration with only momentary rest stops during which plants are circled and examined in search of females. Short-movement flight entails relatively slow, low-level, more-or-less direct-line movement from one perch to another nearby, apparently involving no searching. Rapid (or Arocket@) flight proceeds in a straight line at above-ground heights of 2 m or more, and functions for longer-distance movement from one place to another, including probably random dispersal. DSF hover in stationary flight (like a hummingbird) over flowers while feeding. Males exhibit territorial behavior by pursuit flight: short bursts pursuing other DSF males or other species of insects that may fly near their Adefended@ territory; this pursuit may culminate in midair "wrestling" and tumbling to the ground followed by further pursuit, or by the original pursuer returning to the vicinity where the flight originated.

Mating among members of the DSF genus has been described by Rogers and Mattoni (1993). After mating, the females lay their eggs in suitable sandy soil. Females possess specialized egg-laying organs enabling the placement of eggs a few centimeters beneath the surface of the sand. This adaptation assures that the eggs are placed in a cooler and moister environment than the surface of the sand. Most oviposition takes place in the shade of shrubs, such as telegraph weed (*Heterotheca grandiflora*) (Rogers and Mattoni 1993). The combination of environmental factors required of suitable ovipositing sites is not known.

Adult DSF have rarely been observed taking nectar from flowers, and have not been seen to take other fluids. The nectaring events observed have been brief, on the order of 2-10 seconds, and the only published accounts have all been restricted to flowers of the California buckwheat (*Eriogonum fasciculatum*) (Kingsley 1996; USFWS 1997). Rogers (1996, 1998) has reported nectaring observations also involving tarweed (*Hemizonia fasciculata*) and wreathplant (*Stephanomeria virgata*).

Little is known regarding predators of the DSF. The introduced Argentine ant (*Iridomyrmex humilis*) has been observed to attack and kill a recently emerged adult DSF (Rogers 1993b). Rogers and Mattoni (1993) and Cazier (1985) reported that large robber flies prey upon *Rhaphiomidas* flies. Other predators of the adult flies may include dragonflies and insectivorous birds. Predators of the early DSF stages are unknown, but may include ants, other subterranean predatory insects, and reptiles.

Reliable estimates of DSF population sizes are unavailable. At the San Bernardino County Hospital preserve, the DSF population was estimated at 7 to 10 in 1994, 4 to 9 in 1995, 5 to 13 in 1996, and 5 to 15 in 1997 (Kiyani 1997). Kiyani (1996a,b; 1997) notes a number of assumptions and uncertainties regarding population counts of the DSF, and thus these estimates must be considered tentative. At another site in 1989, a direct count of 13 individuals was made within a half hour over a 10-ac portion of a 150-ac site (Ballmer 1989; USFWS 1997). It has been speculated that typical DSF population densities are likely on the order of 24/ha (10/ac) (USFWS 1997).

Along with other species in the genus, the DSF appears to have very narrow habitat requirements (Rogers and Mattoni 1993); moreover, different microhabitats are selected depending upon sex and specific behaviors involved (Kingsley 1996). The primary habitat requirement for the DSF is sandy substrate with a sparse cover of perennial shrubs and other vegetation. Based upon observations of this and several other members of the *Rhaphiomidas* genus, optimal vegetative cover is probably less than 50 percent, and may be as low as 10-20 percent (USFWS 1997).

The specific species composition and densities of plants preferred by the DSF are currently unknown (Kiyani 1996a). Definitive associations of adults with specific plants have not been established. Typically, the native plant species most consistently found where the DSF occurs (thus commonly considered "indicator species" of suitable habitat) are California buckwheat, telegraph weed, and California croton (*Croton californicus*) (Ballmer 1989; USFWS 1997). Though the former two have been implicated recently as possibly essential to the fly (Kingsley 1996), it has not been conclusively demonstrated whether any of these or other particular plants actually provide resources critical to the DSF, or if they are simply indicators of other, less obvious, habitat factors required by this species. Additional native plants found commonly where the DSF occurs include annual bur-sage (*Ambrosia acanthicarpa*), rancher's fireweed (*Amsinckia menziesii*), vinegar weed (*Lessingia glandulifera*), sapphire eriastrum (*Eriastrum sapphirinum*), and Thurber's spineflower (*Centrostegia thurberi*). Though the foregoing plants are those that occur most commonly in locations where the DSF is found, they also occur where it is not found and their presence does not necessarily imply the presence of the DSF.

Invasive non-native vegetation severely degrades or eliminates the habitat of the DSF (USFWS 1997). Non-native plants especially notorious in this respect include Russian thistle (*Salsola tragus*), horehound (*Marrubium vulgare*), mustard (*Brassica* sp., *Hirschfeldia incana*), cheese weed (*Malva parviflora*), and many species of introduced grasses such as rip gut brome (*Bromus diandrus*) and foxtail chess (*Bromus madritensis* ssp. *rubens*). These exotic plants may alter the amount of soil moisture or make the substrate physically unsuitable for the survival of the DSF and other native subterranean invertebrates.

Notwithstanding the foregoing inferences regarding habitat preferences and requirements, the DSF has been recorded from time to time (albeit in low number and usually fleetingly) in habitats that are substantially degraded and possessed of few apparently favorable attributes for the species. Moreover, the current absence of the DSF on a particular site within its range does not necessarily indicate that future occupation could not occur or re-occur should conditions on the site become more suitable. For example, the DSF has been recorded recently on certain sites that have been graded or disked repeatedly in the past, after such activity ceased and to some extent the site returned to more natural conditions.

As mandated by the ESA, the USFWS has prepared a recovery plan for the DSF (USFWS 1997). The objective of the recovery plan is to ultimately reduce the risk of DSF extinction to the point that it can be downlisted, i.e., removed from listing as an endangered species. The plan establishes three geographically defined recovery units (RU) known as the Ontario, Jurupa, and Colton RUs. The Survey Site falls within the Colton RU, which contains the majority of currently known populations of DSF.

In order to accomplish its objective, the DSF Recovery Plan predicates that each RU must contain occupied and/or restorable-to-suitable-for-occupation habitat for at least one population of DSF. Further, the plan stipulates that a minimum of eight DSF populations must occur across the 3 RUs, of which four must be in the Colton RU, two each on either side of the east-west running Interstate 10.

EXISTING CONDITIONS

The Survey Site is an irregularly shaped pseudo-rectangular parcel of fenced vacant land with its long dimension situated in an east-west orientation. The site is divided east to west by a Union Pacific Railroad spur line that exits the site in its north-central region. Three-quarters of the site is located to the south of the spur line. Dividing the site in its western half, north to south, is a drainage ditch that apparently carries runoff from the landfill and industrial area to the north. Surrounding land uses include industrial to the north, east (across Milliken Ave.) and southeast; commercial across Haven Ave. to the west; and landfill adjacent south-central and southwest. A Southern California Edison (SCE) transmission line corridor is present approximately 100 m (300 ft) south of the southeast corner of the Survey Site.

The topography of the site slopes gradually upward from approximately 290 m (870 ft) above MSL in the southwest to 300 m (890 ft) above MSL in the northeast. Site substrate is classified by soil maps of the U.S. Department of Agriculture (USDA 1980) as Delhi Fine Sand soil formation.

An abandoned vineyard covers most of the site; in the far western portion on both sides of the Union Pacific RR spur line the vineyard remains in active production. Vegetation between the abandoned rows of grape vines consists of several species of ruderal (weedy) native and non-native grasses and forbs (herbs other than grasses) that are good colonizers of disturbed areas, accompanied by a few remnant or reestablishing Riversidean sage scrub species. Among the plant species present are cultivated grape (*Vitis vinifera*), annual bur-sage (*Ambrosia acanthicarpa*), totalote (*Centaurea melitensis*), horseweed (*Conyza canadensis*), brittlebush (*Encelia farinose*), sunflower (*Helianthus annuus*), short-podded mustard (*Hirschfeldia incana*), London rocket (*Sisymbrium irio*), Russian thistle (*Salsola tragus*), deerweed (*Lotus scoparius*), red-stemmed filaree (*Erodium cicutarium*), horehound (*Marrubium vulgare*), cheeseweed (*Malva parviflora*), puncture vine (*Tribulus terrestris*), wild oats (*Avena* sp.), foxtail chess (*Bromus madritensis* ssp. *rubens*), ripgut grass (*Bromus diandrus*), and Bermuda grass (*Cynodon dactylon*).

All three plant species (telegraph weed [*Heterotheca grandiflora*], California croton [*Croton californicus*], California buckwheat [*Eriogonum fasciculatum*]) known commonly to be present where the DSF occurs (i.e., "indicator species") are present on the site. Several of the species indicated above are invasive species known to be deleterious to the suitability of habitat for the DSF.

Plant diversity on the site is moderate. A total of 58 species in 17 families was detected (Appendix A), slightly less than half (26) of which are non-native. Vegetation density on the site varies owing to the manner in which the agricultural crop is managed. The active portion of the vineyard has been cultivated to reduce weeds, leaving a sparse growth of primarily non-native weeds growing among the grape vines. Vegetation density between the abandoned grape vines is much greater. The abandoned portion includes

several areas where telegraph weed and California buckwheat are present in numbers. Access roads are present throughout the site; many of these are kept free of vegetation by spreading of winery mast. Large areas of exposed Delhi Fine Sand are present along some of these roads, and in various other areas, especially around the site perimeter.

In all, approximately one-quarter of the Survey Site has been altered substantially by the excavation of fill dirt, stripping away the Delhi Fine Sand substrate, as well as the construction and maintenance of a flood control channel and railroad spur that have contaminated the underlying Delhi Fine Sand soils with Tujunga soils. The soils thus contaminated have been compacted into a hard, dense surface layer.

METHODS

Review of Existing Information

Documentation pertinent to the biology of the DSF and biological resources in the vicinity of the Survey Site was compiled, reviewed, and analyzed. Information reviewed included: (1) Federal Register listing package for the Delhi Sands flower-loving fly; (2) literature pertaining to habitat requirements of the DSF; (3) the Recovery Plan for the DSF (USFWS 1997), and (4) California Natural Diversity Data Base (CNDDDB 2004).

Concurrent with this survey, sites within the vicinity of the Survey Site known to be occupied by the DSF were visited to assess directly or by discussion with other surveyors the current status and activity patterns of various DSF populations in the region.

Focused Survey

A focused survey was conducted for the DSF on the Survey Site to assess its presence or absence. The survey was conducted in accordance with USFWS interim general survey guidelines, which recommend two replicate surveys per week during the flight period of the DSF (defined by survey guidelines as 1 August through 20 September, but modified by the Service for the current year to commence 1 July), to be performed between the hours of 1000 and 1400 during appropriate weather conditions (USFWS 1996b). Acting under the direction of Larry Munsey, surveys were conducted by Dale Powell (TE 006559), Guy Bruyey (TE 837439), and Denise Woodard and Stan Spencer (TE 777965-7).

A total of 24 surveys was performed on the following dates inclusive: 5-7, 11, 15, 18-22, 26-29 July; 2-5, 9-12, 16-19, 23-26, 30, 31 August; and 1, 4, 6, 8, 11, 13, 15, 18, 20 September. Weather conditions during the surveys were generally conducive to high levels of invertebrate activity. Temperatures at start and end, respectively, of the survey period typically ranged between 27 and 42EC (80-106 EF), with the exception of 13 occasions when the temperature at survey start was less (in most cases only slightly) than 27 EC (80 EF), but with one exception reached well above this mark before the end of the survey period. Wind speed typically ranged between 0 and 20 km/hr (0 and 12 mph). Skies were generally clear or with scattered clouds, with a few exceptions when hazy or overcast conditions prevailed.

During the surveys, the Survey Site was walked systematically and deliberately in search of both DSF sexes and discarded pupal cases. The surveys included careful examination of plant flowers, stems, and foliage; open patches of sand; shaded areas at the base of plants; air space in the immediate vicinity of flowering plants; and general air space within unaided vision above the site. Thus, an exhaustive search was accomplished for flying, feeding, perching, or otherwise engaged flies.

All insects encountered during the surveys were identified to the lowest possible taxon, either by sight or, when necessary, by capture and subsequent determination in the laboratory. Only active and exposed macro insect fauna was considered, thus other less obvious groups no doubt also present (e.g., springtails, termites, earwigs, thrips, etc.) were not recorded in all cases.

RESULTS AND DISCUSSION

No DSF or DSF sign (*i.e.*, discarded pupal cases) were observed on the Survey Site during the survey, nor was the DSF detected on the site during three prior year's surveys (MBA 2006).

A total of 85 species of insects in 56 families was recorded on the site during the survey. A full list of insects observed is provided in Appendix B.

Among the birds observed or heard on or above the site during the survey were the European starling (*Sturnis vulgaris*), mourning dove (*Zenaida macroura*), rock dove (*Columba livia*), house finch (*Carpodacus mexicanus*), lesser goldfinch (*Carduelis psaltria*), barn swallow (*Hirundo rustica*), cliff swallow (*Petrochelidon pyrrhonota*), northern rough-winged swallow (*Stelgidopteryx serripennis*), Anna's hummingbird (*Calypte anna*), American kestrel (*Falco sparverius*), northern mockingbird (*Mimus polyglottos*), northern harrier (*Circus cyaneus*), red-tailed hawk (*Buteo jamaicensis*), killdeer (*Charadrius vociferus*), turkey vulture (*Cathartes aura*), American crow (*Corvus brachyrhynchos*), western kingbird (*Tyrannus verticalis*), black phoebe (*Sayornis nigricans*), Say's phoebe (*Sayornis saya*), white-throated swift (*Aeronautes saxatalis*), Brewer's blackbird (*Euphagus cyanocephalus*), and western meadowlark (*Sturnella neglecta*) and burrowing owl (*Athene cunicularia*). Other vertebrates detected were the western fence lizard (*Sceloporus occidentalis*), side-blotched lizard (*Uta stansburiana*), coast horned lizard (*Phrynosoma coronatum blainvillae*), black-tailed jackrabbit (*Lepus californicus*), Audubon cottontail (*Sylvilagus audubonii*), pocket gopher (*Thomomys bottae*), long-tailed weasel (*Mustela frenata*), California ground squirrel (*Spermophilus beecheyi*), coyote (*Canis latrans*), and heteromyid rodents (burrows, tracks, and tail drags).

The results of this and the former year's survey as reported elsewhere satisfy the Federal requirement to demonstrate the absence of the DSF on the Survey Site.

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APPENDICES

APPENDIX A
PLANTS OBSERVED ON THE PROJECT SITE ¹

ANGIOSPERMS (DICOTYLEDONS)

ASTERACEAE — SUNFLOWER FAMILY

- Ambrosia acanthicarpa* – annual bur-sage
- Artemisia californica* – California sagebrush
- Baccharis pilularis* – coyote brush
- Baccharis salicifolia* – mule fat
- * *Carduus pycnocephalus* – Italian thistle
- * *Centaurea melitensis* – tocalote
- * *Conyza bonariensis* – flax-leaved horseweed
- * *Conyza canadensis* – horseweed
- Encelia farinosa* – brittlebush
- Ericameria pinifolia* – pinebush
- Gnaphalium californicum* – California everlasting
- Helianthus annuus* – common sunflower
- Heterotheca grandiflora* – telegraph weed
- * *Lactuca serriola* – prickly lettuce
- * *Sonchus oleraceus* – common sow thistle
- * *Verbesina encelioides* – golden crown-beard

BORAGINACEAE — BORAGE FAMILY

- Amsinckia menziesii* – rancher's fireweed
- Cryptantha intermedia* – common forget-me-not
- Pectocarya linearis* – slender pectocarya

BRASSICACEAE — MUSTARD FAMILY

- * *Hirschfeldia incana* – short-podded mustard
- * *Sisymbrium irio* – London rocket

CHENOPODIACEAE — GOOSEFOOT FAMILY

- Atriplex canescens* – four wing saltbush
- Chenopodium berlandieri* – pitseed goosefoot
- Chenopodium desiccatum* – aridland goosefoot
- * *Cycloloma atriplicifolium*
- * *Salsola tragus* – Russian thistle

EUPHORBIACEAE — SPURGE FAMILY

- * *Chamaesyce maculata* – spotted spurge
- Croton californicus* – California croton

FABACEAE — LEGUME FAMILY

- Astragalus pomonensis* – Pomona rattleweed
- Lotus purshianus* – Spanish clover
- Lotus scoparius* – California broom
- * *Melilotus albus* – white sweetclover

GERANIACEAE — GERANIUM FAMILY

- * *Erodium botrys* – broad-lobed filaree
- * *Erodium cicutarium* – red-stemmed filaree

LAMIACEAE — MINT FAMILY

- * *Marrubium vulgare* – horehound
- Salvia apiana* – white sage
- Salvia mellifera* – black sage

MALVACEAE — MALLOW FAMILY

- Malacothamnus fasciculatus* – chaparral mallow
- * *Malva parviflora* – cheeseweed

ONAGRACEAE — EVENING PRIMROSE FAMILY

Oenothera californica – California evening primrose

POLYGONACEAE — BUCKWHEAT FAMILY

- Eriogonum fasciculatum* – California buckwheat
- Eriogonum gracile* – slender woolly buckwheat
- * *Rumex crispus* – curly dock

RHAMNACEAE — BUCKTHORN FAMILY

Ceanothus crassifolius – hoaryleaf ceanothus

SALICACEAE — WILLOW FAMILY

Salix exigua – narrowleaf willow
Salix gooddingii – Goodding's black willow
Salix lasiolepis – arroyo willow

SOLANACEAE — NIGHTSHADE FAMILY

- Datura wrightii* – jimson weed
- * *Nicotiana glauca* – tree tobacco

ZYGOPHYLLACEAE — CALTROP FAMILY

- * *Tribulus terrestris* – puncture vine

ANGIOSPERMS (MONOCOTYLEDONS)

POACEAE — GRASS FAMILY

- * *Avena barbata* – wild oat
- * *Bromus diandrus* – ripgut grass
- * *Bromus madritensis* ssp. *rubens* – foxtail chess
- * *Cynodon dactylon* – Bermuda grass
- Distichlis spicata* – saltgrass
- * *Hordeum murinum* – foxtail barley
- * *Schismus barbatus* – Mediterranean grass

TYPHACEAE — CATTAIL FAMILY

Typha sp. – cattail

¹ This is not intended as an exhaustive listing of the vegetation occurring on the site; some annual herbs or very uncommon species may not have been detected by the field survey. Floral taxonomy used in this report follows the *Jepson Manual: Higher Plants of California* (Hickman 1993). Additional common plant names are taken from Munz (1974), Beauchamp (1986), Roberts (1989), Abrams (1923, 1944), and Abrams and Ferris (1951, 1960).

* non-native

APPENDIX B
*INSECTS OBSERVED ON THE PROJECT SITE*¹

ORDER ODONATA c DRAGONFLIES & DAMSELFLIES

AESHNIDAE — DARNER FAMILY

Aeshna multicolor – multicolored darner

LIBELLULIDAE — SKIMMER FAMILY

Libellula saturata – big red skimmer

Pantala flavescens – globetrotter

Sympetrum (Tarnetrum) corruptum – pastel skimmer

Tamea onusta – red saddlebags

COENAGRIONIDAE — NARROW-WINGED DAMSELFLY FAMILY

Argia vivida – violet dancer

ORDER ORTHOPTERA — GRASSHOPPERS, KATYDIDS & CRICKETS

ACRIDIDAE — SHORT-HORNED GRASSHOPPER FAMILY

Schistocerca nitens – gray bird grasshopper

Trimerotropis californicus

Trimerotropis pallidipennis – pallid band-wing

TETTIGONIIDAE — LONG-HORNED GRASSHOPPER FAMILY

1 unidentified species

GRYLLIDAE — CRICKET FAMILY

Gryllus sp. – field cricket

ORDER MANTODEA — MANTIDS & WALKINGSTICKS

MANTIDAE — MANTIS FAMILY

Iris oratoria – Mediterranean mantis

THYSANOPTERA — THRIPS

THRIPIDAE — THRIPS FAMILY

1 unidentified species

ORDER HEMIPTERA — TRUE BUGS

ANTHOCORIDAE — MINUTE PIRATE BUG FAMILY

1 unidentified species

MIRIDAE — PLANT BUG FAMILY

Lygus sp.

PENTATOMIDAE — STINK BUG FAMILY

Chlorochroa (Petidia) uhleri/sayi – Say's stink bug
Murgantia histrionica – harlequin bug

LYGAEIDAE — SEED BUG FAMILY

Geocoris sp.
Lygaeus kalmii – small milkweed bug

REDUVIIDAE — ASSASSIN BUG FAMILY

Zelus tetracanthus

ORDER HOMOPTERA — HOMOPTERANS

CICADELLIDAE — LEAFHOPPER FAMILY

Homalodisca lacerta – smoke tree leafhopper

ORDER NEUROPTERA — NET-WINGED INSECTS

MYRMELEONTIDAE — ANTLION FAMILY

1 unidentified species

ORDER COLEOPTERA — BEETLES

HYDROPHILIDAE — WATER SCAVENGER BEETLE FAMILY

1 unidentified species

COCCINELLIDAE — LADYBIRD BEETLE FAMILY

Harmonia axyridis
Hippodamia convergens – convergent ladybird beetle

RHIPIPHORIDAE — WEDGE-SHAPED BEETLE FAMILY

Macrosaigon sp.

TENEBRIONIDAE — DARKLING BEETLE FAMILY

Eleodes gracilis – stink beetle

SCARABAEIDAE — SCARAB BEETLE FAMILY

Cotinus texana (mutabilis) – green fruit beetle

CHRYSOMELIDAE — LEAF BEETLE FAMILY

Diabrotica undecimpunctata – western spotted cucumber beetle
Lema trilineata – three-lined potato beetle

CURCULIONIDAE — SNOUT BEETLE FAMILY

Trichobaris sp.

ORDER LEPIDOPTERA — MOTHS AND BUTTERFLIES

SUBORDER HETEROCERA — MOTHS

SPHINGIDAE — SPHINX OR HAWK MOTH FAMILY

Manduca sexta – tobacco hornworm sphinx moth

ARCTIIDAE — TIGER MOTH FAMILY

Estigmene acrea – salt-marsh caterpillar

NOCTUIDAE — MILLERS & CUTWORM FAMILY

1 unidentified species

SUBORDER RHOPALOCERA — BUTTERFLIES

HESPERIIDAE — SKIPPER FAMILY

Hylephila phyleus – fiery skipper

Atalopedes campestris – field skipper

PAPILIONIDAE — SWALLOWTAIL FAMILY

Papilio rutulus – western tiger swallowtail

PIERIDAE — WHITES & SULFURS FAMILY

Pieris (Artogeia) rapae – cabbage white

Pieris protodice – checkered white

Colias eurytheme – orange sulphur

NYMPHALIDAE — BRUSH-FOOTED BUTTERFLY FAMILY

Cynthia (Vanessa) cardui – painted lady

Junonia (Precis) coenia – buckeye

LYCAENIDAE — HAIRSTREAKS, COPPERS & BLUES FAMILY

Brephidium exilis – pygmy blue

Leptotes marina – marine blue

Icaricia (Plebejus) acmon – acmon blue

Strymon melinus – common hairstreak

ORDER DIPTERA — TRUE FLIES

TABANIDAE — HORSE & DEER FLY FAMILY

Tabanus punctifer – big black horse fly

APIOCERIDAE — FLOWER-LOVING FLY FAMILY

Apiocera convergens – convergent flower-loving fly

MYDIDAE — MIDAS FLY FAMILY

Nemomidas pantherinus – midas fly

ASILIDAE — ROBBER FLY FAMILY

Efferia albibarbis

BOMBYLIIDAE — BEE FLY FAMILY

Thyridanthrax atrata
Villa atrata

DOLICHOPODIDAE — LONG-LEGGED FLY FAMILY

Condyllostylus philicornis

SYRPHIDAE — HOVER FLY FAMILY

Copestylum (Volucella) mexicana – cactus fly

CONOPIIDAE — THICK-HEADED FLY FAMILY

Physocephala texana

TEPHRITIDAE — FRUIT FLY FAMILY

Ceratitis capitata

MUSCIDAE — MUSCID FLY FAMILY

Musca domestica – house fly

TACHINIDAE — TACHINID FLY FAMILY

1 unidentified species

CALLIPHORIDAE — BLOW FLY FAMILY

Phaenicia sericata – green bottle fly

SARCOPHAGIDAE — FLESH FLY FAMILY

Sarcophaga haemorrhoidalis – flesh fly

ORDER HYMENOPTERA — ANTS, BEES & WASPS

BRACONIDAE — BRACONID WASP FAMILY

1 unidentified species

ICHNEUMONIDAE — ICHNEUMONID WASP FAMILY

1 unidentified species

CHALCIDIDAE — CHALCID WASP FAMILY

1 unidentified species

CHRYSIDIDAE — CUCKOO WASP FAMILY

Parnopes edwardsii – Edwards' cuckoo wasp

MUTILLIDAE — VELVET ANT FAMILY

Dasymutilla sp.

FORMICIDAE — ANT FAMILY

Pogonomyrmex californica – red harvester ant

POMPILIDAE — SPIDER WASP FAMILY

Pepsis chrysothemis – tarantula hawk

VESPIDAE — PAPER WASP FAMILY

Eumenes bolli

Polistes apachus – paper wasp

Polistes exclamans – zebra paper wasp

Polistes fuscatus – golden polistes

SPHECIDAE — THREAD-WAISTED & DIGGER WASP FAMILY

Ammophila sp. – thread-waisted wasp

Bembix comata – sand wasp

Cerceris sp.

Chalybion californicus – blue mud wasp

Chlorion aerarium

Philanthus multimaculata

Prionyx foxi

Sceliphron caementarium – black-and-yellow mud dauber

Tachytes sp.

HALICTIDAE — HALICTID BEE FAMILY

Agapostemon texana – metallic sweat bee

MEGACHILIDAE — LEAFCUTTING BEE FAMILY

Megachile sp.

ANTHOPHORIDAE — DIGGER BEE FAMILY

Anthophora urbana

APIDAE — BUMBLE BEE & HONEY BEE FAMILY

Apis mellifera – honey bee

Xylocopa varipuncta – valley carpenter bee

¹ This list reports insects observed on the site during the surveys for the DSF; it is not intended to represent an exhaustive insect survey.



October 16, 2006

Christopher Garrett
Latham & Watkins
600 W. Broadway, Suite 1800
San Diego, CA 92101-3375

**Subject: Revised Jurisdictional Assessment for a 103-Acre Property,
City of Ontario, San Bernardino County, California**

Dear Mr. Garrett:

This letter report documents the findings of a jurisdictional assessment for Assessor's Parcel Numbers (APN) 0211-281-04, -21, and -23, hereafter referred to as Project Site or Site, conducted by Michael Brandman Associates (MBA).

SITE LOCATION

The Project Site is 103-acres located in the City of Ontario, San Bernardino County, California. The Site is generally located north of State Route 60, south of Interstate 10, east of State Route 71, and west of Interstate 15 (Exhibit 1). The Project Site can be found in Section 36, Township 1 South, Range 7 West, of the *Guasti, California* United States Geological Survey (USGS) 7.5-minute topographic quadrangle map (Exhibit 2). More specifically, the Site is located north of Mission Boulevard, south of Francis Street, east of Haven Avenue, and west of Milliken Avenue (Exhibit 3).

Historic land use within the Project Site consists of active agriculture, specifically a vineyard. Currently the eastern portion of the Site is actively disked for weed abatement purposes. The western portion of the Site still contains a remnant vineyard, but has remained fallow for many years. Surrounding land use adjacent to the Site is dominated by various commercial developments to the north, east, and west, and a landfill to the south.

PROJECT DESCRIPTION

The Sares Regis Group proposes to develop the entire Project Site for commercial purposes, similar to the surrounding land uses.

METHODOLOGY

Literature Review

Prior to the field survey of the Site, MBA conducted a thorough literature review of various reference material and existing documentation for the proposed project. These references are provided in Attachment B enclosed within this letter.

The *Guasti, California* USGS topographic quadrangle map and recent aerial photography (2005) of the area were reviewed in an effort to locate and identify the boundaries of any potentially jurisdictional features that may occur on the Project Site. Additionally, information on the existing conditions of the Site were gathered from MBA's *Burrowing Owl Focused Survey Report for a 103-Acre Property in Ontario, San Bernardino County, California*, dated July 19, 2006.

Jurisdictional Assessment Field Survey

MBA senior biologist Scott Crawford, and project biologist Karl Osmundson, conducted a pedestrian survey of the entire Project Site and adjacent land on September 12, 2006. The survey was focused on portions of the Site that contain potentially jurisdictional areas as determined through the review of topographic and aerial maps. All potential jurisdictional drainage features and/or wetlands that occur onsite were mapped in the field on aerial photographs.

Width and length measurements of the ordinary high water mark (OHWM) were noted at approximately 100-foot intervals. Physical characteristics of each feature were carefully documented in field notebooks. Detailed descriptions of vegetation and plant communities that exist within and immediately adjacent to each feature was noted. Soil pits were also taken at appropriate areas to confirm the presence of any hydric soils and delineate the boundaries of any potential wetlands on the Site.

Data gathered during the field survey was incorporated into Geographical Information System (GIS) Arcview software following the survey to identify drainage dimensions. The Arcview application was then used to calculate the surface area of the channel in acres. Acreage calculations were verified using the aerial photograph and field data to estimate the approximate drainage length and then calculating surface area by multiplying total length of the feature by its average width. Jurisdictional impacts were calculated by overlaying the jurisdictional areas layer with the existing Site plan.

JURISDICTIONAL ASSESSMENT RESULTS

Ephemeral Feature

The Project Site contains a single unnamed ephemeral feature, located in the eastern portion of the Site (Exhibit 4). The feature is the result of erosion associated within urban run-off from the adjacent commercial development to the north. Nuisance flows from the adjacent streets are

channeled into a soft-bottom channel at the terminus of Dupont Avenue. The feature likely conveys flows only during and immediately following storm events.

The feature contains an OHWM that varies from 10 to 30 feet within the Project Site. Existing vegetation within the channel is dominated by:

- Narrow-leaved willow (*Salix exigua*)
- Common sunflower (*Helianthus annuus*)
- Telegraph weed (*Heterotheca grandiflora*)
- Western ragweed (*Ambrosia psilostachya*)
- Horsetweed (*Conyza canadensis*)
- White sweet-clover (*Melilotus alba*)

The feature flows south across the property for approximately 600 linear feet before flowing offsite. It then continues for a short distance before flowing directly into an active detention facility containing two detention basins.

The existing detention facility contains several in-flow pipes from the landfill to the west and south. An overflow drain conveys excessive flows into a much larger detention facility to the southeast, adjacent to Milliken Avenue. There is no evidence of any direct or indirect hydrologic connectivity to any downstream waters of the United States or waters of the State. The feature is therefore considered a non-jurisdictional artificially created erosion feature located in a previous upland area.

Man-Made Induced Wetland Feature

A small saturated area occurred within the western portion of the Project Site during the site visit (Exhibit 4). This feature was approximately 50 feet wide and 400 feet long. This feature was artificially created as a result of a ruptured irrigation or sewer line beneath the soil surface. The age of the hydrophytic vegetation associated with the saturated area suggested that the leak was less than a year old. The vegetation associated with the central portion of the saturated area was dominated by broad-leaved cattails (*Typha latifolia*) and red willow (*Salix laevigata*) with inundated and saturated soils that contain sulfidic odor and gleyed soils. Although portions of this feature met the minimum criteria to be considered wetlands, it was an artificially created man-made induced wetland, and is not considered jurisdictional by regulatory agencies.

Currently, the man-made induced wetland has been removed in order to fix the rupture irrigation or sewer line. It is not likely that this area will return to a wetland area since the source of the hydrology has been removed.

PERMITS/AGREEMENTS

It is likely that the proposed project includes the completed filling and grading of the entire Project Site. The proposed project will not affect any jurisdictional drainage features and therefore no permits or agreements will be required.

Christopher Garrett
October 16, 2006
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If you have any questions or concerns regarding this report, please call me at 714.508.4100.

Sincerely,

A handwritten signature in black ink, appearing to read 'Scott A. Crawford', with a stylized, sweeping flourish at the end.

Scott A. Crawford, M.A.
Section Manager, Natural Resources
Michael Brandman Associates
220 Commerce, Suite 200
Irvine, CA 92602

Enclosures: Attachment A: References
 Attachment B: Regulatory Background
 Exhibit 1: Regional Map
 Exhibit 2: Local USGS Vicinity Map
 Exhibit 3: Local Aerial Vicinity Map
 Exhibit 4: Drainage Location Map

SC:vm|dt

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ATTACHMENT A: REFERENCES

- California, State of. 1989. *Fish And Game Code*.
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- Department of Army-South Pacific Division 2001 (June). *Guidelines for Jurisdictional Delineations for Waters of the United States In the Arid Southwest*.
- Federal Interagency Committee For Wetland Delineation. 1987 *Federal Manual for Identifying and Delineating Jurisdictional Wetlands*, U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, U.S. Fish and Wildlife Services, and U.S.D.A. Soil Conservation Service. Washington, D.C. Cooperative Technical Publication.
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- U.S. Department of Agriculture, Soil Conservation Service and Forest Service. 1978. *Soil Survey of Southwestern Western Riverside County*.
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ATTACHMENT B REGULATORY BACKGROUND

JURISDICTIONAL WATERS AND WETLANDS

Impacts to natural drainage features and wetland areas are regulated by the United States Army Corp of Engineers (USACE), Regional Water Quality Control Board (RWQCB), and CDFG based upon the policies and regulations discussed below.

United States Army Corp of Engineers Regulations

Federal Clean Water Act - §404

The USACE administers §404 of the federal Clean Water Act (CWA). This section regulates the discharge of dredge and fill material into waters of the U.S. USACE has established a series of nationwide permits that authorize certain activities in waters of the U.S., if a proposed activity can demonstrate compliance with standard conditions. Normally, USACE requires an individual permit for an activity that will affect an area equal to or in excess of 0.5 acre of waters of the U.S. Projects that result in impacts to less than 0.5 acre can normally be conducted pursuant to one of the nationwide permits, if consistent with the standard permit conditions. USACE also has discretionary authority to require an Environmental Impact Statement for projects that result in impacts to an area between 0.1 and 0.5 acre. Use of any nationwide permit is contingent on the activities having no impacts to endangered species.

Waters of the United States

Waters of the U.S., as defined in the Code of Federal Regulations (CFR) §328.3, include all waters or tributaries to waters such as lakes, rivers, intermittent and perennial streams, mudflats, sand-flats, natural ponds, wetlands, wet meadows, and other aquatic habitats. Frequently, waters of the U.S., with at least intermittently flowing water or tidal influences, are demarcated by an ordinary high water mark (OHWM). The OHWM is defined in CFR §328.3(e) as the line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas. In this region, the OHWM is typically indicated by the presence of an incised streambed with defined bank shelving.

In June 2001 the USACE South Pacific Division has issued *Guidelines for Jurisdictional Delineations for Waters of the United States in the Arid Southwest*. The purpose of this document was to provide background information concerning physical characteristics of dryland drainage systems. These guidelines were reviewed and used to identify jurisdictional drainage features within the Project Site.

Wetlands

According to the USACE *Wetlands Delineation Manual, Technical Report*, three criteria must be satisfied to classify an area as a jurisdictional wetland:

1. A predominance of plant life that is adapted to life in wet conditions (hydrophytic vegetation)
2. Soils that saturate, flood, or pond long enough during the growing season to develop anaerobic conditions in the upper part (hydric soils)
3. Permanent or periodic inundation or soils saturation, at least seasonally (wetland hydrology)

Wetland vegetation is characterized by vegetation in which more than 50 percent of the composition of dominant plant species are obligate wetland, facultative wetland, and/or facultative species that occur in wetlands. As a result of the 2001 Solid Waste Agency of North Cook County (SWANCC) case, a wetland must show connectivity to a stream course in order for such a feature to be considered jurisdictional. Although wetland criteria was used to identify if areas were considered wetlands, the exact limits of jurisdiction were not measured based on the standard wetland delineation protocol as described in the 1987 USACE manual.

United States Army Corp of Engineers Regulated Activities

The USACE regulates the discharge of dredged or fill material including, but not limited to, grading, placing of rip-rap for erosion control, pouring concrete, laying sod, and stockpiling excavated material. Activities that generally do not involve a regulated discharge, if performed specifically in a manner to avoid discharges, include driving pilings, drainage channel maintenance, temporary mining and farm/forest roads, and excavating without stockpiling.

Regional Water Quality Control Board Regulations

Clean Water Act - §401

Per §401 of the CWA, “any applicant for a Federal permit for activities that involve a discharge to waters of the State, shall provide the Federal permitting agency a certification from the State in which the discharge is proposed that states that the discharge will comply with the applicable provisions under the Federal Clean Water Act.” Therefore, before the USACE will issue a §404 permit, applicants must apply for and receive a §401 water quality certification from the RWQCB.

Porter-Cologne Water Quality Act

The RWQCB regulates actions that would involve “discharging waste, or proposing to discharge waste, within any region that could affect the water of the state” (water code §13260(a)), pursuant to provisions of the Porter-Cologne Water Quality Act. “Waters of the State” are defined as “any surface water or groundwater, including saline waters, within the boundaries of the state” (water code §13050 (e)).

Regional Water Quality Control Board Regulated Activities

Under §401 of the CWA, the RWQCB regulates all activities that are regulated by the USACE. Additionally, under the Porter-Cologne Water Quality Act, the RWQCB regulates all activities, including dredging, filling, or discharge of materials into waters of the state that are not regulated by the USACE due to a lack of connectivity with a navigable water body and/or lack of an OHWM.

California Department of Fish and Game Regulations

California Fish and Game Code - §1600 to §16003

The CFG Code mandates that “it is unlawful for any person to substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake designated by the department, or use any material from the streambeds, without first notifying the department of such activity.” CDFG jurisdiction includes ephemeral, intermittent, and perennial watercourses, including dry washes, characterized by the presence of hydrophytic vegetation, the location of definable bed and banks, and the presence of existing fish or wildlife resources.

Furthermore, CDFG jurisdiction is often extended to habitats adjacent to watercourses, such as oak woodlands in canyon bottoms or willow woodlands that function as part of the riparian system. Historic court cases have further extended CDFG jurisdiction to include watercourses that seemingly disappear, but re-emerge elsewhere. Under the CDFG definition, a watercourse need not exhibit evidence of an OHWM to be claimed as jurisdiction. However, CDFG does not regulate isolated wetlands; that is, those that are not associated with a river, stream, or lake.

California Department of Fish and Game Regulated Activities

The CDFG regulates activities that involve diversions, obstruction, or changes to the natural flow or bed, channel, or bank of any river, stream, or lake that supports fish or wildlife resources.